

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—33RD YEAR.

SYDNEY, SATURDAY, JULY 6, 1946.

No. 1.

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THE RESPONSIBILITY OF THE DOCTOR IN REGARD TO REHABILITATION IN PRIVATE AND HOSPITAL PRACTICE.¹

By DOUGLAS GALBRAITH,
Lieutenant-Colonel, Australian Army Medical Corps.

I GREATLY appreciate the opportunity and the honour of talking here this evening. So far as I know this is the first time that a lecture on this subject has been given to the British Medical Association in Australia.

It should be axiomatic in lectures of any kind that they should not be boring, particularly if listeners have to sit on a hard seat for an hour or so at the end of a busy day. Some medical subjects are not easy to make interesting; but if I fail to keep you from being bored this evening it will be my own fault and not the fault of the subject. For the subject of rehabilitation is not a dehydrated affair of scientific symbols and solecisms; it concerns that most important and most interesting of all subjects, human relationships. It is a subject which cannot fail to be interesting, provided I can clothe it in appropriate language and provided that, carried away by my own enthusiasm, I do not talk for too long.

You may remember the story of the old lady who had listened to her son making his first public speech. Afterwards he asked her how he had got on. "Oh, not so bad, Jamie", the old lady replied, "but, laddie, you missed three or four grand opportunities." "How was that, Mother?" he asked. "Well", she said, "you had three or four opportunities to sit down and you did not take them." I hope I shall not similarly miss my opportunities tonight.

WHAT MEDICAL REHABILITATION IS.

First of all, it would be wise to try to define what the term "rehabilitation" means, for the word has become a veritable "abracadabra" in the post-war period and has been applied to subjects as varied as the rearranging of the Balkan countries on the one hand and to the putting on the road again of a thirty years old motor car on the other. I like Large's definition, quoted by Squadron Leader Graham Andrew, of the Royal Australian Air Force, in THE MEDICAL JOURNAL OF AUSTRALIA of June 9, 1945:²

Rehabilitation is that method by which function, both physiological and psychological, is restored following illness or injury. It thus connotes the restoration of free movement to stiffened limbs, vigour to tired minds, of courage and confidence to quailing spirits; in short, the physical, mental and ethical toning up of the whole individual being.

From this it should be clear why I have said that rehabilitation concerns human relationships. It concerns the restoration of privilege, the privilege of a full and active life and the avoiding of invalidism. And since there cannot be a full and active life without occupation and employment, it follows that the ultimate aim of rehabilitation is employment. Therefore a short and simple definition of rehabilitation may be that it is the full range of treatment, commenced as soon as possible after the accident or illness and continued until the fullest possible working capacity is restored. Rehabilitation commences when the patient is in the ambulance going to hospital and finishes with satisfactory and secure employment. The term "rehabilitation" should therefore be confined to this procedure relating to illness or injury, and the term "reestablishment" should be used for all those other multitudinous problems of transition from war to peace with which the word has become associated.

¹ Read at a meeting of the Victorian Branch of the British Medical Association on March 6, 1946.

THE PHASES OF REHABILITATION.

It will be clear that there are two phases of rehabilitation, the phase concerning medical or surgical treatment, and the phase concerning occupation and employment. I hope to be able to show that there is no hard and fast boundary line between these two phases and that one passes imperceptibly into the other.

I also want to show that the doctor plays a vitally important part in both these phases. For this reason, when I was asked to give this talk I requested that the title be changed from "Rehabilitation" to "The Responsibility of the Doctor in Regard to Rehabilitation in Private and Hospital Practice". Tonight I want to be deliberately provocative. I want to throw down a gauntlet and say to the medical profession that rehabilitation is not only a matter which concerns us, but an essential part of our job, and that it is up to us to give the leadership which the medical profession has so often shown in community welfare. Our responsibility, in short, does not end when we get the patient over the acute stage of his or her illness. It is also part of our responsibility to provide supervision, help and counsel until the man or woman is once more restored to the privilege of full employment. Such a policy would lead to a lessening of the reproach that in so many cases the end result of illness or injury, no matter of what type these may originally have been, is a neurosis of greater or less degree.

Competent medical authorities estimate that not less than 60% of those regularly attending the out-patient departments of our large hospitals are suffering from neurosis, which is either part of or has been added to their original complaint. This is hardly a state of affairs about which we can remain complacent. You all know how frequently in your own practice you meet both men and women in whose lives "my illness" or "my operation" has become a landmark and a perpetual topic for discussion.

THE ORIGIN OF REHABILITATION.

To try to cover in one lecture the scope of this work of rehabilitation, from treatment through convalescence to employment, is to emulate the corset-maker who squeezes a large subject into a small compass. In my case, too, there will probably be a lot left over. But I think it would be of interest to turn back a few pages of history. First of all, I want to make it clear that for many generations in ordinary general practice this work we now know as rehabilitation has been part of the everyday routine and responsibility of the intelligent doctor. In his own practice he has been in touch with the domestic, social and employment background of his patients. He has given his help in many more ways than by simply prescribing a bottle of medicine. Galen, you remember, said that "confidence and hope do more than physic". It is soon realized by the doctor commencing practice that the wage-earner, with a family to keep, is not nearly so concerned with the fact that he has an interesting X-ray finding or an unusual blood picture as he is with the question of when he will be able to be back at work again.

So rehabilitation, with its emphasis on occupation and employment, is not a new-fangled science. What has been done has been to broaden the basis of this work, to lay down certain principles and to work out a detailed procedure; perhaps, too, to add a few high-sounding names. Rehabilitation is really common-sense practice wrapped up in new terminology, like a wise old lady decked out in a new, brightly coloured dress, so that even her best friends may fail to recognize her.

The first planned campaign of rehabilitation on a large scale was that of Sir Robert Jones in the war of 1914-1918. You remember that he was not satisfied with the results of orthodox methods of treatment of orthopaedic patients and was convinced that occupation and employment were an essential part of treatment; so in his hospitals and after great opposition (mainly by other doctors) he established treatment workshops. Eventually, even his greatest critics were convinced of the success of his policy. But, like so many war-time developments, the value of this

work was not fully appreciated in peace-time, except by orthopaedic surgeons, many of whom had been pupils of Robert Jones. These, however, kept the torch alight, and practical methods of rehabilitation were used in centres such as the Birmingham Accident Hospital, the Albert Dock Hospital for merchant seamen, the London, Midland and Southern Rehabilitation Centre at Crewe for railway employees, and other orthopaedic hospitals, such as the Wingfield Morris Hospital at Oxford and the Robert Jones and Agnes Hunt Hospital at Oswestry.

The British Medical Association gave strong support to rehabilitation work and clearly outlined modern thought in these matters in 1937 in evidence given on behalf of the Joint Committee of the British Medical Association and the Trades Union Congress to the Inter-Departmental Committee on the Rehabilitation of Persons Injured by Accidents.¹⁰ This report, now nine years old, is well worth reading by those who are interested, and even more worthwhile for those who so far have not been interested.

Then war came again, with all its urgent demands for maximum manpower, and the machine of rehabilitation gathered surprising momentum. War does that, as you know. James Russell Lowell wrote as follows:

Not but what abstract war is horrid,
I sign to that with all my heart,
But civilization does get forth,
Sometimes upon a powder cart.

REHABILITATION IN GREAT BRITAIN.

In Britain in 1940 the word "rehabilitation" again came into prominence. The Battle of Britain was in full fury, and it is no exaggeration to say that the fate of the Empire, perhaps of the world, depended on a pathetically small number of aircraft and pilots. When the aeroplanes were damaged, mechanics worked day and night to get them into the air again. When pilots were ill or injured, all modern methods of treatment were used; and yet it seemed to take a long time to get personnel back on duty. Those were urgent, frightening days, and doctors had to recast their ideas and devise methods for speeding up convalescence. Watson-Jones preached and practised the rehabilitation policy of Robert Jones, and this was adopted as standard practice in the Royal Air Force, with results which were strikingly good and which without doubt played an important part in the winning of the Battle of Britain.

THE POLICY OF REHABILITATION.

What, then, was this policy of rehabilitation? One can perhaps sum up the progress of an average patient in what one might call the "pre-rehabilitation era" as being a period of active medical or surgical treatment, followed by a period of passive convalescence, then some sick leave, and eventually a return to work on light duties. Convalescence continued to be regarded as a purely passive process, by which the natural recuperative powers of the body, by the efflux of time, brought about a return to the normal so far as the normal was capable of attainment. The attitude of the doctor towards the convalescent patient when no further active treatment was necessary, was one of only mild, benevolent interest. Slowness in the regaining of mental and physical energy was considered to be normal and inevitable. Illness, from the point of view of the patient, continued to be 10% treatment and 90% boredom.

The "new" policy, actually one as old as Hippocrates, but revived by the urgency of war, gave the doctor the responsibility of planning an active campaign to be continued until the patient was again fit for full employment. Underlying this policy was the realization that in every person who has been ill or injured occurs some degree, greater or less, of loss of tone of the muscles and of the mind. Clinical proof of this lay in the observation of convalescent patients, in the length of time taken to return to normal health and in the common aftermath of the neuroses. Scientific proof lay in the demonstration of the changes taking place in muscles after a period of two or three weeks' rest in bed; for example, the electrocardio-

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graph demonstrated changes in many normal hearts. It was realized that this loss of physical and mental energy was perpetuated by the passive hospital routine, whereby most things are done for the patient, and that "hospitalization" could be a very real disease.

Protagonists of the active approach to convalescence agreed that the answer was simple. They said that if one wanted to keep one's muscles and brain active, one used them. Orthopaedic treatment had for long been based on this policy, and Girdlestone summed up the matter when he remarked that one of the greatest contributions of orthopaedic surgery had been the knowledge, now widely accepted, that the way to restore movement, power and skill to a damaged part was to prescribe natural and easy activity in purposeful employment. The patient, instead of playing a purely passive role, was educated to take an active part in his own recovery. Flowing from this basic fact of the mental association between occupation and health came the plan by which mental and physical activities were prescribed by the doctor, at a gradually increasing *tempo*, just as the doctor would prescribe a pill or a potion. There was at first opposition to this plan in Britain by doctors who, strangely enough, considered it to be new-fangled and unnecessary and not part of their job; but results were so clearly demonstrated that it rapidly became standard practice in all service hospitals and eventually in all hospitals under the Emergency Medical Service scheme.

THE BEGINNING OF REHABILITATION IN THE AUSTRALIAN FORCES.

In 1942 methods similar to those used in the Royal Air Force were introduced into the Royal Australian Air Force, and the name of the Royal Australian Air Force convalescent depots was changed to "rehabilitation units".

In the Australian Army, with many creaks and groans, a scheme got under way similar to that used in Britain. Quite early in the war, occupational therapy and also craft work had been instituted in army base hospitals. In the middle of 1944 I was appointed to the medical directorate as medical rehabilitation officer. For a while I think I must have been by far the most unpopular officer in the Australian Army Medical Corps. To most medical officers rehabilitation meant just more bits of paper to fill in, and to harassed commanding officers, yet another monthly report to complete. I was fortunate in the medical officers I chose to be responsible for this work in each command or lines of communication area, and to their loyalty and evangelistic fervor I pay unstinted tribute. They have done a grand job under all sorts of difficulties. Apart from these six appointments there was no increase in either medical officers or staff, and so the scheme had to get going with very little in the way of bricks or even mortar; in this its start differed from that of the schemes in Britain, Canada and America, where adequate staff and equipment were provided. In each hospital or convalescent depot a hospital rehabilitation medical officer was nominated to look after medical rehabilitation activities in addition to his ordinary duties. I am very appreciative of the help and encouragement given to the scheme by Major-General S. R. Burston, Director-General of Medical Services (by whose permission this lecture has been given), and by the staff of the medical directorate. In the inauguration and carrying on of this work I owe my thanks to many medical officers and members of the staffs of hospitals and convalescent depots, who, often under great difficulties, pulled their weight in this new task.

THE POLICY AND MECHANICS OF THE PLAN OF REHABILITATION IN THE ARMY.

To avoid confusion I want to make it clear that there exists in the Australian Army an Army Rehabilitation Service, whose responsibility it is to give all possible help to those members leaving the army and returning to civil life, in the many problems which such a transition entails. This is a non-medical service, and to my mind would be more fitly termed a reestablishment service. The

medical rehabilitation service is distinct from this service and has regarded rehabilitation as being concerned with the care of personnel who have a disability.

The Aim of the Medical Rehabilitation Service.

I have stated earlier that there are two phases of rehabilitation, the phase concerning medical or surgical treatment and the phase concerning occupation and employment. My job, therefore, was to produce for the Director-General of Medical Services a coordinated plan with the following objects: (a) to ensure the use of all methods in hospitals and convalescent depots which will return the convalescent soldier to duty as quickly and as efficiently as possible (medical or therapeutic rehabilitation); (b) to assist in the suitable reposting in the army of soldiers who have been medically down-graded and are no longer fit for certain kinds of service, and to assist in guiding to suitable civilian employment those soldiers no longer able to continue to serve (vocational or employment rehabilitation). These two facets of rehabilitation will be briefly discussed.

Medical or Therapeutic Rehabilitation.

As we have seen, the basis of the plan is that the medical officer, who is the keystone of the arch of rehabilitation in both its phases, shall prescribe for all his patients a daily routine of physical and mental activities. These will commence at as early a stage as possible in the illness or injury and continue at a steadily increasing *tempo* until the maximum amount of recovery has been made and full employment is possible. The team to carry out this work, under the guidance of the doctor, consists of the ward sister, the physiotherapist, the occupational therapist, the handcraft worker, the physical training instructor, the medical social worker and the staff of the Army Education Service.

The equipment required by this team consists of a good physiotherapy department with a gymnasium, playing fields with facilities for a variety of games, occupational workshops and handcraft rooms, gardens, and educational facilities, including good general and technical libraries.

The routine has been for the medical officer to prescribe the type of activity on a special prescription form (Appendix A), which is circulated to the departments concerned. Usually the patient's day is divided into four periods. Physical exertion commences with mild physical exercise given while the patient is still in bed, and passing by graduated stages to strenuous activities in the gymnasium and playing fields. The physiotherapists control these activities up to the point where it is considered that it is safe for instructors in physical and remedial training to take charge.

Occupational activities may start with minor handcrafts while the patient is in bed, and progress to moderately heavy activities in the workshops or to gardening or other out-of-door work. In workshops in army medical units there have been facilities for carpentry, leather work, tinsmithing, upholstery, boot repairing, saddlery, pottery, photography, radio work and motor-car engineering. Outside activities have included gardening, poultry and chicken raising, vegetable production and pig farming.

Workshop instructors have been employed; but whenever possible the work has been supervised by trained occupational therapists, who, as you know, must take a professional course of at least two years. During this course, in addition to learning a wide range of crafts, they receive a basic knowledge of anatomy, physiology and psychology and of certain aspects of medical treatment. With this training it is their responsibility under the supervision of the doctor, and often in close collaboration with the physiotherapist, to plan purposeful occupation which will encourage the use of the damaged part of the system. Such occupation may vary from gardening or routine bench work for the psychiatric patient to work involving the use of a screwdriver for the patient with a fractured elbow and consequent limitation of pronation and supination. There is great need in Australia for additional trained occupational therapists, both in special and general hospitals and also in private clinics and

practices. The handcraft teacher is skilled in teaching crafts, but has not had the professional training of the occupational therapist. In the Forces, handcraft teachers have done excellent work in teaching hobbies for the relief of tedium and in carrying out more specialized work under the supervision of the occupational therapist. The training and supplying of handcraft teachers has been one part of the outstanding service rendered by the Australian Red Cross Society.

All these physical and occupational activities have an effect on the mental outlook. Additional help is given by the Army Educational Service, which provides talks, discussions and recordings of good music, in addition to libraries covering a wide range of general and technical subjects. My admiration for the work done by the Army Education Service is great, both for its work in base hospitals and for its work in hospitals in forward areas.

Yet in spite of all the facilities provided, there may be another fact retarding recovery. There may be some social or domestic problem, and here the medical social worker, also provided by the Australian Red Cross Society, makes her contribution as a member of the team.

It is most important to note that all the activities I have described in this section are not haphazard. They are part of a programme planned and prescribed by the medical officer and carried out by his team. The ward sister, who probably sees more of the patient and knows him better than any other member of the staff, is a valued member of the team.

Such is "planned convalescence" as we have tried to establish it in the Australian army and as it is used as a standard in the British, Canadian and American armies and in many of the British civil hospitals. I think most of you will agree with me that this procedure is an advance on the routine in all but a few civil hospitals in Australia. To this matter I shall return later in this paper.

Vocational Rehabilitation.

Let us turn now to the other phase of rehabilitation, the vocational or employment aspect. I have said that the treatment phase of rehabilitation passes almost imperceptibly into the employment phase and that the responsibility of the medical officer continues at least until the goal of employment comes in view.

In the army, when the maximum amount of function has been obtained, a decision has been necessary whether the soldier could: (i) go back to his old posting or a similar posting, (ii) be medically down-graded, (iii) be discharged as medically unfit for further service.

In the case of those soldiers physically able to go back to former postings, the work of the medical officer finishes with the completion of treatment. For those whose medical category has been lowered by recent illness or injury, a scheme has been evolved whereby the medical officer gives an opinion on the type of reposting suited to the soldier's altered condition. This advice goes to the allocation officer, who is responsible for reposting the soldier when he reaches the general details depot. The effectiveness of the liaison between the medical and the allocation authorities has varied according to the interest of the officers concerned; but on the whole it has made a solid contribution in reducing the number of "square-peg-round-hole" type of postings. The soldier has felt that some effort was being made to help him and to deal sensibly with his problem.

For those soldiers medically unfit for further service, vocational rehabilitation has, I think, done a good job. Standardized procedure and good team work have been built up. The problem here is that of a man or woman being returned by the army to civil life and having a disability involving some restriction of employment. To place such a person satisfactorily and securely in employment requires that the following three questions be answered: (i) At what job is this man (or woman) able to work productively and with satisfaction to himself? (ii) Can the proposed job be done without danger to this person or to others? (iii) To what extent, if any, does the patient require continuing medical supervision?

It is obvious that no one person can supply the full answer. There must be team work and pooling of the

opinion of (i) the doctor, who knows the medical story, (ii) the education officer, who can assess the educational background, (iii) the vocational guidance officer, who can assess vocational potentialities, (iv) the training authorities, who have to provide the professional and industrial training, (v) the employment authorities, who must take into consideration existing requirements and limitations in the labour market as well as the man's potentialities.

To get the best results all the medical members and the non-medical members of this vocational team must know something of each other's activities. If we represent the activities of the medical members by one circle and the activities of the non-medical members by another

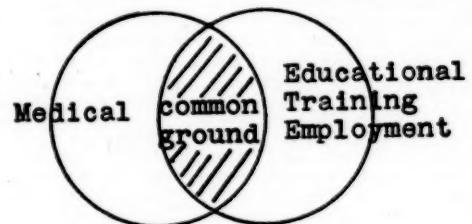


FIGURE I.
Diagram to illustrate rehabilitation procedure.

circle and then place these circles so that they overlap by perhaps a quarter, then the segment common to both circles represents this field of knowledge common to both parts of the team (Figure I). The standard method of pooling medical and non-medical knowledge concerning a soldier leaving the army with a disability involving occupational restriction, is for the medical officer to complete for each soldier a medical rehabilitation advice form (Appendix B). This form gives information in regard to the disability, the prognosis and the need for further treatment or special diet, an opinion whether the soldier can return to his preenlistment job, and, if not, an opinion regarding certain types of work which would be unsuited to the medical condition. This last-mentioned information is conveyed by means of a code (Appendix C) which arranges certain medical and surgical conditions into a number of groups and relates these to physical and environmental conditions, also arranged in groups. It is constantly stressed, however, that these groupings are not to be made automatically, but that each is an individual decision for each soldier. This medical advice is passed, by way of the Army Rehabilitation Service, to the training and employment authorities.

The criterion of successful placement is that the man or woman will, in spite of the disability, be competent to hold the job down by sheer ability, and not because of the sympathy of the employer or because of any governmental decree. If the criterion is to be anything less than this, the disabled person will be one of the first to be out of a job whenever the general level of employment in the community falls. The procedure of the vocational team in regard to dealing with more difficult placement problems is to bring the members of the team together into consultation instead of conveying the information by written statement. The method is that a placement problem committee meets each week in the base hospitals. Members who may act on this committee include the following: medical officers, officers of the Army Rehabilitation Service, officers of the Army Education Service, medical social workers, representatives of the Repatriation Commission, representatives of the Department of Social Services, representatives of bodies which have special knowledge of certain placement problems—for example, the Blinded Soldiers' Association or the Limbless Soldiers' Association. The problem of each disabled man or woman is discussed by the committee so that the best decision may be reached.

You will see, then, that the whole basic policy of vocational rehabilitation is to pool knowledge. This truly

represents planned placement, and it is the only kind of placement procedure which is likely to give permanent, as opposed to statistical, results. I do not for one moment suggest that every result is perfect, or even good. But it is at least a logical plan to try to tackle these problems in a realistic way. It is a continuation and expansion of the work which the Repatriation Commission has done since the war of 1914-1918 and in which the commission has accumulated a great deal of experience.

In addition to some hundreds of thousands of men and women who had been discharged from the forces before the end of the war of 1939-1945, and of whom approximately 130,000 were discharged as medically unfit, there were at the cessation of hostilities something more than 600,000 men and women still serving. Of these, an unexpectedly high proportion returning to civil life have some disability involving occupational restriction. The problem is, therefore, one of considerable magnitude. From an ethical viewpoint the services have felt that they have a responsibility in helping these men and women back to a full life. Away back in 1662 "The Souldier's Catechisme" made the following statement:

They that have received any hurt or losse by the warres, ought to be liberally provided for and comfortably maintained all their dayes, by them that sent them forth.

Although that was written nearly three hundred years ago, it is worth remembering today. But the provision should be such as to afford all those who have served their country the dignity of useful employment in addition to any financial recompense. We all feel that our country has a great future, and I am sure that all who give thought to this matter will realize that the degree of success which attends the absorption back into the community of these men and women, whether in normal health or suffering from any disability, will play a considerable part in the future of Australia. From an economic point of view, to turn a potential invalid pensioner into a wage-earner is surely worth the expenditure of time and money. For each person with a disability there is a niche in the community, if we help him to find it.

REHABILITATION IN THE CIVIL COMMUNITY.

The Target.

Tonight I have tried to outline to you a practical scheme of rehabilitation which is being used in the Australian forces for members still serving. It is hoped to use this scheme as a pattern for a scheme of rehabilitation for these members after they leave the forces, and I have been lent by the army to the Ministry of Post-War Reconstruction to help in planning such a scheme in regard to those ex-service personnel who are not the responsibility of the Repatriation Commission. The formation of a plan offers problems, particularly because of shortage of trained staff. For example, there is a lot to be done in providing adequate post-discharge facilities for those with psychiatric disability. Lieutenant-Colonel A. J. M. Sinclair and Dr. Harold Maudeley have made specific recommendations regarding the care of these persons, and their recommendations are at present being considered by the authorities concerned.

The immediate problem, therefore, concerns ex-service personnel, and the Repatriation Commission and the Department of Social Services, the two departments responsible respectively for those with disabilities caused or not caused by the war. It is hoped, however, that from this plan will emerge a national rehabilitation scheme for Australia which will provide facilities, as is the case in Britain, Canada and America, for the treatment, training and employment of all people throughout the community who have a temporary or a continuing disability. This is the eventual target.

What Britain has Achieved.

What can be achieved by such a plan was demonstrated in Britain in dramatic fashion in 1940, when Mr. Bevin became Minister for Labour. Every ounce of manpower

was needed to fight Germany, and Mr. Bevin, in obtaining an estimate of the manpower available, was astonished to find that 186,000 people were unemployed because of medical disability. By forming teams of doctors, training and employment authorities, and by providing adequate facilities for treatment and training, it was found possible to absorb into employment almost 180,000 of these people.

The Employment of the Physically Handicapped.

Actual experience has shown that there are very few people who with suitable training and careful choice of occupation cannot be employed. Many of you will know that in a job analysis at the Ford works in America it was found that 7,882 kinds of work were being done, and that only 12% of these were classed as heavy and requiring first-class physique; 45% of the work required very little physical effort, 670 kinds of jobs could be done by limbless persons, 715 by one-armed persons and 10 by blind persons. At the time of the survey 10% of all employed in the works, amounting to approximately 9,500, were physically limited. From these figures it will be seen that there is little reason for refusing employment to those who are physically disabled. The days when employment of disabled people carried no greater prospect than a job as a liftman or a commissionaire outside an hotel are surely gone in any enlightened community.

In Australia the Commonwealth Employment Department is carrying out job analyses of many of our industries so that these may be related to the employment of persons with a disability.

The United States of America Department of Education recently stated that 98% of firms employing partially disabled persons found that, when suitably placed, such employees were actually more reliable than fit co-workers.

In Australia more than 62,000 people are drawing invalid pensions. The Department of Social Services, which is responsible for the payment of invalid pensions, has authority to make provision for the vocational training of potential invalid pensioners. It is to be hoped that substantial progress will be made in this work. It is crying to be done.

Certain hospitals and voluntary bodies in Australia have shown what can be done in the field of employment of disabled persons. Most of this work has been done for adolescents and, paradoxically enough, children's hospitals and societies for the care of crippled children have led the way without very much apparent interest or help from either Commonwealth or State governments. There is now in Australia a voluntarily formed Commonwealth Advisory Council for the Physically Handicapped.

In Victoria the Children's Hospital, Melbourne, established ten years ago at the orthopaedic section at Frankston a training hostel for the vocational training of the older disabled children. Placement in employment was arranged mainly through the Victorian Society for Crippled Children. The results obtained have been excellent, and many adolescents who had no future but a wheel chair and an invalid pension have been for years in secure employment. Many of them I have come across during the war, either serving with the forces or doing war work. This work was of real value during the 1937-1938 epidemic of infantile paralysis in Victoria and will be needed again in the present epidemic.

The Facilities Required for a Complete Rehabilitation Scheme for the Civil Community.

Essentials of Policy.

For a working scheme of rehabilitation there are two main essentials: (a) that the resources of medical knowledge be fully utilized, both in treatment and in planning for employment of disabled persons; (b) that proper machinery be set up, which can relate the handicap of disablement to the varying demands of different occupations.

Viewing the whole picture of illness and accident as met with in our civil hospitals and private practice in Australia, few who have studied the problem would assert that we are supplying the complete answer. The present procedure by which a patient is discharged to his home

from hospital so soon as he is able to move about, and then attends hospital perhaps once a week as an outpatient, gives no opportunity for continuous medical supervision and vocational advice to the stage of full employment. I wonder, for example, to what extent in-patient surgeons know just how long is taken for their patients with a fractured femur to go back to work again, or if the patients do, in fact, go back to their old jobs?

I am indebted to Colonel Charles Littlejohn for figures from Britain, giving an estimate that of all persons obliged by illness or injury to remain away from work for more than three weeks, 70% return to their former jobs, 20% require alternative work or a new occupation, and 10% are unsuitable for return to ordinary civil employment. In this 10% are included the totally disabled, those fit for employment in a sheltered workshop or in home employment, and the unemployable. Thus the problem we have to meet in forming a policy is by no means small.

Requirements for Medical (Treatment) Rehabilitation.

In hospital practice the aim should be to provide the coordinated team work of medical officer, ward sister, physiotherapist, occupational therapist, physical training instructor, medical social worker and educational staff, which has been a feature of the service hospitals and convalescent depots. Facilities would be required for active physiotherapy, and gymnasias, occupational therapy workshops, sports areas and educational facilities would be necessary. Hospital policy would have to decide whether the bulk of these facilities was to be provided at (a) the main hospital, for both in-patients and out-patients, or (b) a convalescent branch, to be developed as a rehabilitation centre, along the lines of the Royal Australian Air Force and Army Rehabilitation Units. The Commonwealth Department of Social Services is at present establishing rehabilitation centres for ex-service personnel.

A main essential, whatever the location of the facilities, is that there should be continuous medical supervision. Instead of building additional expensive hospital accommodation in the centre of our big cities, why should we not have a large country or seaside convalescent or rehabilitation centre to which a group of hospitals would transfer patients whenever the acute stage of illness or injury had passed?

In civil practice we should be able to refer our patients to a rehabilitation centre, either attached to a hospital or run as a private clinic, where there would be facilities for physiotherapy, occupational therapy and physical training.

Requirements for Vocational (Employment) Rehabilitation.

I have quoted figures to show that only 70% of those who are away from work for more than three weeks because of injury or illness are able to return to their old job. The training for the others, having been decided on by a pooling of medical, educational, training and employment opinion, can be carried out in (a) normal places of training, (b) vocational training centres, (c) rehabilitation annexes, (d) sheltered workshops.

(a) Normal places of training are schools, technical colleges *et cetera*.

(b) At vocational training centres in cities and towns could attend each day those men and women who at the end of active treatment were not sufficiently well nor sufficiently mobile to attend the normal places of training. These centres would be buildings of adequate size with up-to-date workshops, lecture rooms and a good technical library. In addition to training facilities, medical supervision should be available at such centres, and facilities for physiotherapy and occupational therapy. In Britain and America there are many such centres.

(c) Rehabilitation annexes could be established in large industrial works, where employees who had been sick or injured could work at selected jobs until they were sufficiently fit to take over their old jobs. The annexes of the Vauxhall and Austin firms in England are examples of what can be done in this way.

(d) Sheltered workshops should provide employment for that small percentage of the disabled who are unable to work under normal conditions of employment.

Authority for the provision of training facilities for disabled persons in Australia is given in the *Re-establishment and Employment Act of 1945*. A next step will be the allocation of responsibility to the departments concerned for the inauguration of these facilities. An outline of rehabilitation procedure is shown in Figure II.

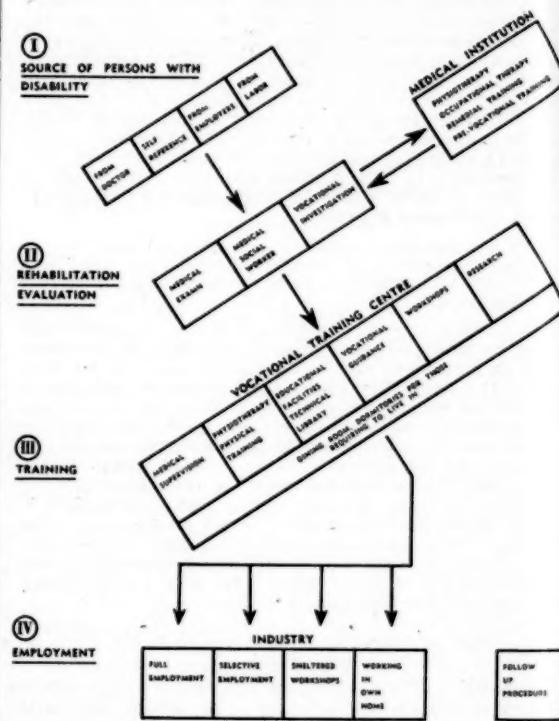


FIGURE II.

THE PART WHICH DOCTORS CAN PLAY IN THE SCHEME OF REHABILITATION.

Rehabilitation deals essentially with people—people who have a medical or surgical disability and have to face the future with it. Guidance of policy is essentially a medical responsibility. The only substitute for the doctor is the layman with a medical dictionary. Let us pray that his use will not come about. If it does, it will be our own fault, because we have not been sufficiently interested. One finds so much courage among disabled people that it is hard not to be interested.

Officially the British Medical Association can use its powerful influence. Individually each of us can practise rehabilitation by following through the progress of our patients to the stage of satisfactory employment, by knowing enough about physiotherapy and occupational therapy at least to take an intelligent interest in these activities, and by not being content either in civil or in hospital practice merely to refer the patient to these special departments without having any clear idea of what such a reference involves. Frequently the directions we give to our patients in regard to exercise or movements after illness or injury are, to put it mildly, vague and unscientific. We cannot all be specialists in industrial medicine, but it would be a great advance if we could interest ourselves in what our patients actually do in their employment. This is part of the background which may be important in our prognosis and our advice as to the

patient's future. Of approximately 20,000 doctors in the American forces seeking post-graduate training, more than 4,000 asked for training in industrial medicine, and of these about 850 wished to take on industrial medicine as a full-time career. A plea for the development of interest in Australia in industrial medicine was made by W. T. Nelson in a paper published in THE MEDICAL JOURNAL OF AUSTRALIA of March 25, 1944.⁽³⁾

From the very nature of their work and responsibility, doctors are what may be called "community-minded". Many of them have realized clearly that housing and food and economics play an important part in health, and their efforts have resulted in advances being made for the betterment of their fellow citizens. In this question of disablement there is a vast field for help by doctors, and a field in which everyone of us can give assistance, whether we are engaged in research, in teaching, or in general or specialist practice. We can stir the interest of the medical student, of medical teaching schools, of our hospital committees, of employers and of the civic authorities in these matters. By doing this we shall be adding a little to the sum total of human endeavour and of human happiness, and in these days of taxation this is perhaps the most tangible return we have for our labours.

REFERENCES.

- (1) G. Andrew: "Rehabilitation as Seen in the Royal Australian Air Force: Some Therapeutic and Occupational Aspects", THE MEDICAL JOURNAL OF AUSTRALIA, June 9, 1945, page 577.
- (2) "Rehabilitation of the Injured", Supplement to British Medical Journal, December 18, 1937, page 367.
- (3) W. T. Nelson: "Industrial Medicine", THE MEDICAL JOURNAL OF AUSTRALIA, March 25, 1944, page 269.

APPENDIX A: PATIENT'S REHABILITATION CARD.

Name.....	Sex.....	Age.....
Unit.....	No.....	Rank.....
Disability.....		
Medical Officer.....		

Activities.	Morning.		Afternoon.		Commences.....	Suspended.....
	1	2	3	4		
Physiotherapy						
Remedial gymnasium						
Diversional occupation						
Occupational therapy						
Physical training						
Educational activities						
Gardening et cetera						
Hospital duties						

APPENDIX B: MEDICAL REHABILITATION ADVICE FORM.

AAF D.2B.
(Introduced Sep., 45.)
(R.A.A.F. Supplement to P.M.17.)

- 1.....
(Surname and initial (Rank)—(Rating) Age Number in BLOCK LETTERS)
2. Remarks on disability (nature to be indicated when considered necessary, and in terms intelligible to laymen)
.....
.....
3. Prognosis (to be given whenever possible):
 - (a) Likely to improve.....
 - (b) Likely to deteriorate.....
 - (c) No change expected.....
4. Restrictions:
 - (a) Strength of recommendation re restriction—indicate the degree of urgency of coded restriction by placing each code number used against the appropriate heading:

Essential.....
Desirable.....

(b) Additional or qualifying comments on restrictions, e.g., temporary unsuitability for any work (indicate approximate period), infectivity, need for special care, etc.

(c) Does the member's medical restriction render return to pre-service occupation advisable?

Normal	Advisable
Pre-service	Inadvisable
Occupation	Immaterial

5. Quote hereunder the answer ("Yes" or "No") to sub-questions of Question 20 of Final Medical Board Form (R.A.N. AM.252.Z; AA Form D.2; R.A.A.F. P.M.17) (Amended August, 1945):
(a) (b) (c)

6. Has member been:

- (a) Informed of nature and degree of disability?
- (b) Advised to seek medical treatment after discharge?
- (c) (If applicable) given necessary dietetic and/or other advice?

Date..... Signature.....
President, Final Medical Board,
or
Examining Medical Officer.

APPENDIX C: INDEX OF DISABILITIES AND OCCUPATIONAL RESTRICTIONS RELATING TO MEMBERS OF THE DEFENCE FORCES.

(This pamphlet is issued for the instruction and guidance of final medical boards and examining Medical officers.)

Direction to Medical Officers Using Index of Disabilities and Occupational Restrictions.

1. Importance of Medical Advice.

Both the medical and the occupational future of the disabled person will be largely influenced by the medical advice given to rehabilitation and employment officers. Medical officers, realizing this far-reaching responsibility, can afford very real help to the disabled person by giving thought and care to their recommendations.

There are two main considerations for the suitable replacement of disabled persons in employment, and medical advice regarding these is essential:

- (i) The physical or mental requirements for employment must be compatible with the person's disability.
- (ii) The type of employment must not, because of the disability, endanger the safety of the disabled person or his fellow employees. This is particularly important in diseases of the eye and ear, and of the nervous and cardio-vascular systems.

2. Index of Occupational Restrictions.

In order to assist medical officers in this matter, there has been prepared an amended Index of Occupational Restrictions. This index consists of two parts—A and B. In Part A is set out a list of the common disabilities from which personnel discharged from the services may be suffering. To each of these has been allotted an index number, or numbers, by which the disability may be related to the physical movements or employment conditions which generally should be avoided. These are listed in Part B, which will be available to civil employment officers.

3. The Reason for the Index.

The index is a convenient way of directing the attention of medical officers to occupational restrictions, commonly associated with certain disabilities. It is to be emphasized that it is not meant to be an automatic method of pairing off disabilities with occupational restrictions. Any attempt to use it in this way would defeat the required object, because there must be so many individual variations. The medical officer will therefore use his own judgement in deciding the restrictions applicable to each individual present, and he will only indicate restrictions when in his opinion these are clearly necessary. Disabled persons with real interest in certain types of employment can often overcome quite serious disabilities in order to work at that employ-

¹ This information is required to expedite determination of eligibility for training.

ment. The index will be used in conjunction with the Medical Rehabilitation Advice Form (A.A.F. D2 (b); supplement to P.M.17), amended September, 1945. The information on this form is passed to service and to civil rehabilitation officers.

4. Use of Medical Rehabilitation Advice Form.

- (i) This form will be completed for all personnel being discharged from the service on medical grounds and the President of the Medical Board will be responsible for the completion and disposal of the form. It will also be completed for personnel who are being demobilized and who have a disability which may impose occupational restriction, but who are not being brought before a Final Medical Board. Such persons may at a later date be unemployed, and this form, which will be filed with the civil rehabilitation authorities, will be of help in their placement in employment. In these instances the Medical Rehabilitation Advice Form will be signed by the examining medical officer who completes A.A.F. D2 (a).
- (ii) It will be noted that the recommendation regarding restriction will be entered in M.R.A.F., paragraph 4, as either essential or desirable. When the existing disability is not one of those shown in Part A, medical officers will refer to Part B, and insert any number or numbers which appear satisfactorily to indicate any occupational restriction.
- (iii) A specific question (M.R.A.F., paragraph 4 (c)) is asked regarding the member's return to his pre-service occupation. The reason for this is that the member's previous training may have to be balanced against any minor restriction he may have for such employment. It may be easier for him to return to a pre-service employment with a minor restriction for such employment than to take up entirely different employment.
- (iv) The answer to question 5 in M.R.A.F. is required to expedite determination for eligibility for training. It has been agreed that if the medical board considers a disability to be associated with war service, training under the Commonwealth Reconstruction Training Scheme may, in suitable cases, be commenced without awaiting the decision of the Repatriation Commission.

5. General Rules on Medical Advice.

In cases of obvious disability, for example, loss of eye or loss of limb, the fact should be stated. In other than surgical cases the nature of the disability need not be stated unless the medical officer is of the opinion that this will be in the member's interest, or convey necessary information to employment officers. If stated, the disability will be given in general terms, and care will be taken to avoid any statement which would be likely to give distress to the disabled person or not be in his best interests to divulge. On the other hand, in certain disabilities, such as epilepsy, it is essential that this be known to employment officers. The medical officer must use his own discretion.

6. Disposal of Rehabilitation Medical Advice Form.

Each service has issued instructions as to method of disposal of form.

Index of Disabilities and Occupational Restrictions, Part A.

Reference to index number of industrial restrictions in Appendix B which may apply to the case.

List of Commoner Diseases.

Diseases of Nervous System:

Psychoses et cetera—schizophrenia: R4-, 101.
Instability—neuroses: R4-, 56, 57, 7-, 8-.
Mental deficiency: R4-, 7-, 8-.
Epilepsy: R4-, 72, 73, 8-.
Organic nervous disease (established): R101.

Diseases of the Eye:

(i) Where vision is so defective as to interfere with ordinary travelling in strange places: R32, 62, 72, 73, 8-.
(ii) Defective but to a lesser degree: R32, 33, 62, 8-.

Diseases of the Ear:

(i) With discharge, requiring daily attention: R51, 52, 53, 54, 55, 72, 91.
(ii) With deafness of noticeable degree: R31, 8-.
(iii) With vertigo: R21, 22, 23, 25, 43, 72, 8-.

Diseases of the Cardio-vascular System:

- (i) Organic valvular disease: R1-, 51, 52, 53, 54, 55, 6-, 72, 73, 101.
- (ii) Myocardial disease: R1-, 41, 42, 43, 5-, 6-, 72, 72, 8-.
- (iii) Disordered rhythm: R23, 42, 51, 52, 63, 82.
- (iv) Arterial disease: R1-, 41, 42, 51, 52, 53, 54, 57, 63, 71, 8-.
- (v) Anaemia (definite): R1-, R62.

Diseases of the Respiratory System:

Tuberculosis—

Active: R101.

Quiescent: R1-, 51, 52, 53, 54, 55, 62, 63, 71, 72, 9-.

Other lung diseases: R11, 12, 51, 52, 53, 54, 55, 62, 63.

Diseases of the Abdomen:

Peptic ulceration: R11, 41, 42, 5-, 62, 63, 71, 72.

Hernia: R1-, 22, 23, 24, 26.

Dysentery and parasitic infections: R91.

Deformities, Atrophies and Amputations:

Feet—

Flat feet: R14, 15.

Talipes: R14, 15.

Other conditions (hammer toes, pes cavus, etc.): R14.

Legs—

Amputation: R13, 14, 15, 21, 22, 23, 24, 25, 26, 72, 82.

Atrophy or restricted movement: R13, 14, 15, 21, 22, 23, 24, 25, 26, 72, 82.

Arm—

Amputation, atrophy or restricted movement: R23, 24, 26, 27, 28.

Spine—

Restricted movement of, etc.: R1-, 21, 22, 23, 24, 25, 26.

Rheumatism and Fibrosis:

R1-, 2-, 53, 54, 55, 61, 63, 71, 72.

Diseases of Genito-urinary System:

Nephritis, calculus: R1, 51, 52, 53, 54, 55, 62, 63, 72.

Enuresis: R72.

Prolapse: R1-, 22, 23, 24, 26, 57, 72.

Leucorrhoea or severe menorrhagia: R72.

Venerel disease: R9-.

Diabetes:

R71, 72, 81, 82, 83.

Diseases of the Skin:

Eczema, dermatitis, severe acne, psoriasis: R51, 52, 53, 54, 6-, 9-.

Note.—Where a group number, e.g., R4-, is used, the limitations refer to all subheadings, e.g., R41, 42, 43, 44.

Index of Disabilities and Occupational Restrictions, Part B.

List of Employment Restrictions.

Where, for medical reasons, employability in some occupations is likely to be permanently or temporarily restricted, the following code may be used in Part 4 (a) of the Medical Rehabilitation Advice Form to indicate the physical movements or employment conditions which should be avoided. The degree of urgency involved may differ in respect of the same person, from one group of movements or condition to another, but, in each case, the strength of recommendation may be indicated by placing the code numbers used opposite "Desirable" or "Essential" under 4 (a) in the M.R.A.F., as seems most appropriate.

Restriction from work involving—

Code

No.

R1. Physical Effort.

R11. Severe respiratory or cardiac strain or physical exertion.

R12. Moderate respiratory or cardiac strain or physical exertion.

R13. General muscular activity and agility.

R14. Walking imposing strain or fatigue.

R15. Standing imposing strain or fatigue.

R2. Particular Affected Movements. (Considered apart from general physical activity.)

R21. Bending or stooping.

R22. Squatting.

R23. Climbing.

R24. Pushing, lifting or throwing.

R25. Balancing.

R26. Reaching.

R27. Gripping.

R28. Fingering.

R3. Affected Sensory Functions.

- R31. Hearing.
R32. Seeing.
R33. Depth perception.

R4. Affected Mental Functions.

- R41. Mental stamina—sustained concentration.
R42. Emotional stability.
R43. Dependability, e.g., freedom from likelihood of sudden collapse or fits.
R44. Intelligence of normal standing (subject to report on psychological test).

R5. Irritant Job Conditions.

- R51. Heat causing sweating or strain.
R52. Humidity causing sweating or strain.
R53. Cold.
R54. Wetness or dampness.
R55. Rapid climatic changes.
R56. Noise.
R57. Vibration.
R58. Glare.

R6. Irritant Materials.

- R61. Handling wet material.
R62. Exposure to chemical solvents, corrosives, dryers, etc.
R63. Exposure to irritant gases, fumes, dust, etc.

R7. Inimical Work Arrangements.

- R71. Irregularities due to shift work, high pressure periods, etc.
R72. Travelling beyond daily distance from home.
R73. Isolation from people.

R8. Danger.

- R81. Control of moving vehicles.
R82. Use of scaffolding or work in high places.
R83. Proximity to exposed machinery, or dangerous materials.

R9. Hazard to Health of Others.

- R91. Handling food.
R92. Human proximity with liability to contagion.

R10. Totally Unfit.

- R101. Temporary restriction from all work.

A RARE ISO-HÆMAGGLUTINOGEN.

By J. J. GRAYDON,

*From the Commonwealth Serum Laboratories,
Melbourne, Victoria.*

OCCASIONALLY reports have appeared of unusual or irregular iso-hæmagglutinogens which have been found in the blood of certain subjects and have occurred independently of the A,B,O, the M,N, and the Rh blood types. Most of these factors have been detected by means of "cold" agglutinins, which are seldom active above a temperature of 30° C. In some cases the specific agglutinins have occurred naturally, in others the agglutinins have been produced in response to the injection of the corresponding antigen, either by deliberate immunization or unwittingly during blood transfusions. Of these agglutinin-agglutinogen systems which have not been actively investigated, the best known is the factor P, which has been shown to occur in about 75% of the white population and 98% of Negroes of New York City (Wiener *et alii*, 1945).

Wiener (1942) has described a rare agglutinin, unrelated to any of the previously known blood factors, which was detected by the chance selection of a donor for transfusion. In this case the patient and donor were both of blood group B. By the usual cross-matching tests it was found that the donor's serum agglutinated the patient's cells but did not agglutinate cells from any other subject of blood group B. Also, the patient's cells were not agglutinated by any serum taken from other persons of the same blood group. The cells of the three children of this

patient were not agglutinated by the rare agglutinin. Little can therefore be said of the heredity of this factor.

A most interesting case of hypersensitivity was reported by Callender, Race and Paykoc (1945) in a patient suffering from *lupus erythematosus diffusus*, who, because of persistent anaemia, received nine blood transfusions. Despite the most careful selection of appropriate donors, an Hr' agglutinin ("St" specificity) and three new antibodies more active at 37° C. than at lower temperatures appeared in the serum of the patient.

Of the antigens detected by these newly discovered agglutinins, the first, "Lutheran", is inherited as a Mendelian dominant character occurring in the blood of 8% to 9% of the English population, and is unrelated to the A,B,O, the M,N, the P or the Rh blood types.

The second antigen, "Willis", is also inherited as a Mendelian dominant character, but it is related to the Rh factor, being present in about 7% of specimens of Rh^o blood of genotype R^aR^a. It is apparently determined by an allele active at Fisher's C-c locus.

The third antigen, "Levay", was found in the blood of the donor and the donor's father, though not in any of several hundred random blood samples examined. Probably it is also a "dominant" character, though apparently very rare.

The purpose of this note is to describe another such rare agglutinin-agglutinogen system, which was detected by chance circumstance in July, 1943.

In the preparation of human serum for use in blood grouping, donors with hæmagglutinins in exceptionally high titre were selected from a panel of donors provided by the Victorian Division of the Australian Red Cross Blood Transfusion Service. Each specimen of serum collected was titrated against red blood cells from members of the laboratory staff of the appropriate groups, with suitable controls. Blood cells from one member (G) of the staff, who was classified as O, MN, Rh^orh were used as a "negative" control for all sera. The serum of one donor (L.J.), who was also of blood group O, had a titre of 1/250 for group A1 cells, 1/120 for group A2 cells, greater than 1/500 for group A2B cells, and 1/120 for group B cells in tests performed at 37° C. However, this group O serum unexpectedly agglutinated "G" cells, also of group O, to a titre of 1/32 at 18° C. and 1/4 at 37° C.

Sixty-one samples of group O cells obtained from other members of the laboratory staff were not agglutinated by this serum. As Rh-positive, Rh-negative, P-positive and P-negative cells and all of the M,N types were well represented in this series, the "new" antigen was probably unrelated to the Rh and M,N systems and the P factor.

Whilst blood grouping surveys on various races were in progress, opportunity was taken to test L.J. serum against samples of group O cells obtained from 91 Papuans and 39 Australian aborigines. None of these was agglutinated by L.J. serum. The specific antigen detected by the "atypical" agglutinin in L.J. serum is evidently rare. However, when blood samples collected from relatives of G were tested, four were found which reacted specifically with this serum (suitably absorbed when necessary). The accompanying chart (Figure I) illustrates the occurrence of the antigen among the members of G's family. The antigen, which had been given the tentative designation "Gr", to distinguish it from the "G" factor of Schiff, has appeared in three successive generations, but so far has not been found in any subjects who are not close relatives of G. Hence it is apparently inherited as a Mendelian dominant character unrelated to the A,B,O and the M,N blood types. Its rareness in the white population indicates that it is not related to the P factor or to the "Lutheran" antigens referred to earlier.

It may be identical with the "Levay" antigen, but the rareness of both makes this unlikely. Further, the "Gr" agglutinin was more active in the cold than at 37° C., whereas the "Lutheran", "Willis" and "Levay" antibodies were more active at 37° C. than at lower temperatures. It is worthy of note that the "Gr" agglutinin could be absorbed with G cells to leave a normal group O serum of high titre. Also it was found possible to absorb the

anti-A1, anti-A2 and anti-B agglutinins from the original serum, leaving a fluid which could be used to detect the "Gr" antigen in cells of any group.

Another point of interest is that the donor (L.J.) was an unmarried girl, aged eighteen years, with a clear medical history. She had never had a blood transfusion, and no reason for the development of the unusual agglutinin could be found.

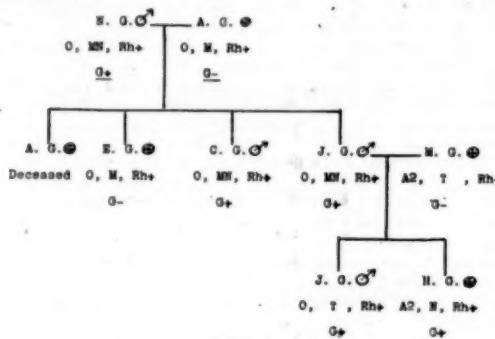


FIGURE I.

The late Dr. Karl Landsteiner is reported to have held firmly to his belief in the complete individuality of blood. The number of individually recognizable types of blood has been increased tremendously by the elucidation of the Rh blood types, and with the discovery of new factors, such as those referred to above, the state envisaged by Landsteiner is being more closely approached.

In the interests of progress along these lines it is desirable that the finding of "atypical" antigens should be reported, even though they may be of no clinical importance and may have no obvious anthropological significance. Also some effort should be made to preserve the specific agglutinins by a suitable process for future reference. This has been done in the present case by freeze-drying samples of the serum in ampoules.

Bibliography.

- A. S. Wiener: "Haemolytic Transfusion Reactions. III. Prevention, with Special Reference to the Rh and Cross-Match Tests", *American Journal of Clinical Pathology*, Volume XII, 1942, page 302.
 A. S. Wiener, E. B. Sonn and Ruth B. Belkin: "Distribution and Heredity of the Human Blood Properties A, B, M, N, P and Rh", *The Journal of Immunology*, Volume L, June, 1945, page 341.
 S. Callendar, R. R. Race and Z. V. Paykoc: "Hypersensitivity to Transfused Blood", *British Medical Journal*, July 21, 1945, page 83.

NATIONAL HEALTH.

By W. G. HEASLIP,
Adelaide.

And if we speak our minds, it is because the fascist threat to civilization, with its lies and its propaganda and its blasphemous hatred of objectivity, makes any suppression of the truth or suggestion of the false of which we might be guilty a betrayal of ultimate standards which are everywhere in peril.

VICTOR GOLLANZ.

It is evident from the Federal Government's proposal to nationalize the medical service that some of our politicians are at last aware of the importance of the national health. They apparently believe that the standard could and should be improved. There is no doubt that they are right. The untimely dead sent to their graves by preventable accident or disease, the inmates of hospitals and institutions who suffer needlessly through ignorance and poverty, and the deformed and disabled, so many of whom are living memorials to ineptitude, all bear witness to the imperfection of our national health and to the inadequacy of our health services.

Let it be stated at once that the medical profession cannot of itself supply what is required to produce optimal health. Nor will nationalizing the medical service alone produce the desired result. The war has shown, particularly in England, that the public health may improve dramatically when the number of medical practitioners has been drastically reduced and the remainder are working under great difficulties. This improvement was due mainly to three factors, which were: (a) movement of slum-dwellers to rural areas, (b) more equitable distribution of and improvement in nature of diet, and (c) elimination of unemployment amongst poor and rich and young and old. None of these is primarily a medical matter. But it appears that such diverse problems as employment of the idle, slum clearance, nutritionally balanced diets, unemployment, decentralization, and elimination of poverty all have a direct bearing on national health. The subject is as complex as the matter of improvement is urgent, and real success will be achieved only by a concerted effort of the whole community.

The articles and letters, which have appeared in medical journals and in the lay Press since the proposal to nationalize medical services was made, demonstrate that neither the public nor the profession fully appreciates the problems involved in improving the national health. This article is an attempt to state and examine briefly some of the basic aspects of the subject, with the detached interest of the spectator who has been a player. If certain statements are found to be provocative, they are not made maliciously, but only to emphasize certain facts which appear to have been neglected previously.

The Medical Profession.

There should be no need to state that the profession should exist for the sole purpose of improving and maintaining the health of the people. Nevertheless it is necessary to remind both the public and the profession that this is the case. While it is well that members should remember that their profession originated from witchcraft and superstition, it is high time they realized that they are public servants and not high priests.

Unfortunately the profession is not at present solely concerned with the people's health. Only a few of the members realize that they are public servants. Possibly still less are intelligently active in trying to improve matters. The provision of an adequate curative service, with some attempts at prevention, is not enough. What is required is that an adequate curative service be made available to everyone, irrespective of his position geographically, financially or morally, and that prevention be implemented to the limit of available knowledge.

It is comforting to remember the great advances that have been made in medicine and surgery in the past century. It is, however, distinctly unpleasant to realize that the public is becoming aware of the shortcomings of the profession, and that the politicians have taken the lead in initiating reforms. The war has blasted open the windows of the mind for many people. The winds of enlightenment have been sweeping in for some years. The "mysteries" of health are doomed along with the "mysteries" of finance. People are becoming increasingly aware that the fundamental right of man is his right to an adequate share of what this world has produced, including man's knowledge and skill in preventing disease and disability.

It is becoming obvious that health is much more dependent on social structure than on medical practice, and that education is more important than medication. It is now common knowledge that disease and disability are mainly due to ignorance and poverty. It cannot be very long before the profession will be asked why it remains satisfied with attempting to cure disease which it should have prevented. It may well be accused openly, as it is now tacitly by the reformers, of failing, *inter alia*: (a) to demand a form of society which would permit everyone to have the chance of maximum health; (b) to demand a system and standard of education which would fulfil the requirements of optimum health; and (c) to educate and train its members adequately.

No honest, educated member of the profession would deny these failures, which are the outcome of its basic failure to realize and to take its proper place in society. This place of high standing is attained only in the office of defender of the people's health. If the profession is to reach this goal the members will have to indulge in considerable realism, honesty, and self-education. When they have done this, the following may happen.

(i) They may realize that they are entitled to no special rights or privileges other than those essential for the maintenance of an adequate service available to everyone.

(ii) They may accept the fact that it is their responsibility to prevent every avoidable illness, accident or disability and to alleviate or cure what cannot be prevented.

(iii) They may proudly acknowledge that they are public servants, and cease to be pedlars of dubious cures.

(iv) They may appreciate fully that their fellow men rely on them for leadership in all matters pertaining to health.

These fruits of realism, honesty and idealism form the background to all future planning, and the basis of any successful proposal for improving the medical service and raising the status of the profession. It is painfully evident at present that the profession has failed to take the lead and that it has lost touch with reality. It has forgotten or ignored the fundamental reason for its existence. This is well illustrated by what members have written in discussing the proposed reforms. It can be said of most of those supporting, as well as all of those opposing, a nationalized service that they are more concerned with the effects on members of the profession than the effects on the national health.

The Public.

Acting on behalf of the public, the Minister for Health is advised by a Parliamentary Joint Committee. The advice and recommendations it tenders are therefore not coloured by party politics. The members of the committee are very well informed on the varying aspects of public health. Unfortunately they are not so well informed on matters of medical practice. To remedy this defect the Minister should also have an advisory committee composed mainly of doctors in active practice. At present the political reformers, as part of the public they represent, share with it the disabilities due to lack of knowledge and expert advice. The recent free medicine bill was an example of this.

For a great many years the sick in mind, as well as the sick in body, have been given infusions instead of instruction, and pills instead of propaganda. The result is a demand for medicine out of a bottle to cure both their ills and their ignorance. We can agree with the principle of not making the individual pay for his medicine, since we have largely ceased to regard illness as a form of divine retribution. But any honest doctor would have advised the Minister for Health that only a small number of drugs are curative; that nearly all the mixtures which are taken have only a psychological effect; and that, while the people want medicine, it is not medicine, in most cases, that they need. If the bill were intended to lessen the taking of preparations not prescribed by a doctor, the honest medical adviser would have pointed out that this pernicious practice is due mainly to ignorance, partly to the expense of getting a prescription, and partly to the infamous propaganda from the vendors of patent medicines. It is to the credit of the profession that it has protested against the traffic in patent medicines, but so far no government has had the courage to prevent it. The public, as a consequence, has become sickness-conscious instead of being health-conscious.

Therefore, while it is desirable that the public should discard its ancient attitude of awe-struck veneration and should learn to regard the members of the profession as responsible for ensuring an adequate medical service, it is essential for the public representatives in Parliament to remember that the profession alone can provide expert advice in matters of medical practice. It should need no further demonstration that the public is not in a position to choose wisely either its medicine or its doctor. Since

it is not even in a position to know what it needs, it rightly expects its expert representatives to supply a health service which is wholly adequate and available.

The public ignorance in itself constitutes a demand for reform without delay. Since manpower is the basic wealth of the nation, there is an economic as well as a humanitarian reason for haste. Moreover, consideration of what is involved, in the provision of an adequate health service for everyone, will show that, no matter how great an effort we make, the task will be lengthy as well as arduous. It will need the combined efforts of public, politicians and profession if there is to be success. The people will have to learn and to pay, the doctors will have to work and to lead, while the politicians will have to become statesmen and provide the necessary reforms.

The Problem of Adequacy.

The chief difficulties of making the service adequate can be briefly outlined under the headings of prevention, medical competence, material facilities, and organization.

Prevention.

From every point of view prevention is better than cure. Therefore the keystone of an adequate service must be prevention. The first step is to ensure that each individual has a sound mind and a healthy body. To achieve this, the body must be given suitable housing, food, clothing, sanitation, employment, recreation and medical attention from birth to death. These are merely basic requirements. For the mind there must be also a suitable education. Such an education would involve practical and theoretical instruction on how to keep healthy, to work, to think, to play, to govern one's actions on a rational basis, and to recognize, control and usefully express emotional impulses.

Making these basic requirements available involves both give and take. It would not be sufficient that the means of education be provided. The instruction must be given by proficient teachers, and must be received by each individual in suitable circumstances and under hygienic conditions. Likewise the essentials for a healthy body must not only be supplied. There must also be the opportunity for everyone to take and use them. They must be available to those in isolated places as well as to those in the city, and to the poor as well as to the rich.

There must also be an active, continuous campaign of public education (propaganda), dealing with both active and passive prevention. People must be made health-conscious. At present the fear of disease, which arises from ignorance and pernicious propaganda, is probably as great an evil as any disease entity in Australia. At the same time much existing disease and disability is the direct result of ignorance. The provision of education is a matter for the politicians, but the profession has the responsibility of ensuring that the public gets the right education.

The profession must also make prevention the keynote of members' training. Most of the disabilities that can be cured can be prevented. Every medical student should be taught that: (a) each disability should be investigated from the aspect of prevention as well as correction; (b) every endeavour and resource should be used to discover the causes of an illness or accident; (c) not only the primary, but also the contributing causes, should be discovered and removed.

Finally, to secure maximum prevention, it will be necessary for the profession and the politicians to devise a form of service which will make it possible to have the following desiderata:

1. The cooperation of the dental, veterinary, physiotherapy and other professions, and of the auxiliary services, such as entomology and optometry.

2. The utilization of adequately trained health officers, engineers, architects and others to deal with such matters as town-planning, water supplies, sanitation, size and situation of factories, hospitals, schools and sanatoria, and food-planning.

3. Facilities of all types to enable (a) necessary preventive research to be done; (b) every individual to be dentally and medically examined at regular, frequent

intervals; (c) every expectant mother to be made competent in the care, management, and feeding of mother, fetus, baby and child; (d) every woman, who so desires, to become a mother without shame or degradation; and (e) every doctor to implement such measures as may be required to prevent ill health and physical or mental disability.

These few notes will suffice to show that implementing prevention to the limit of available knowledge will provide a firm basis for a sound national health service.

Medical Competence.

Apart from neglect of preventive measures, it is regrettably plain that the standard of competence reached and maintained by the profession as a whole is not as high as it might be. Nor can it reach the desired height until the whole medical service, including the teaching and training of members, is reorganized. Every member must be taught and trained from the beginning to the end of his career. He must be made and kept as competent as possible. A practicable scheme of training in a reorganized service is outlined below.

There will have to be sufficient doctors to allow each one to attend post-graduate lectures and demonstrations at regular intervals, and also to allow time for study and reading, for investigation of significant phenomena, to record interesting or important data, and to prepare articles and reports.

The existing separation between research workers and clinicians must be removed so that there may be maximum use of clinical data, maximum application of research findings, and a more intelligent and orderly direction of research.

Medical competence is dependent on others besides the members of the profession. In particular the standard of nursing practice must be raised to and maintained at the highest possible level. Nursing services must be extended and improved. In addition there is the whole lay staff associated with medical services. Dressers, cleaners, cooks, technicians, dietitians and others must all be trained and provided for, so that they are able at all times to give the highest possible standard of service. Until medical competence reaches the highest attainable standard, our health services cannot be adequate.

Material Facilities.

No service can be adequate unless it is provided with the best facilities. At present our health facilities are far from being the best. Our hospital accommodation is short of our needs and our hospitals range from good to bad. Design, size, situation and equipment must all be studied continuously and, whenever necessary, modernization must be effected. Siting and grouping of hospitals is at present mainly bad. Nearly all modern, well-equipped ones are found in the heart of a large town or city, instead of in an area away from smoke, dust, noise, crowds and other buildings. All that is required in the cities is a sufficient number of emergency and casualty stations to deal with patients needing immediate help.

Facilities for associated services must be extended and modernized. Country centres should be supplied with buildings and equipment for dental, physiotherapy, radiology and pathology units. Research facilities must be brought up to date and extended. Mobile research units should be provided so that any epidemic, in any place, can be promptly and efficiently investigated *in situ*.

Clinics, convalescent depots and sanatoria must be supplied where required. It may be noted, however, that the necessity for such units would decrease rapidly with the increased practice of prevention. For example, the elimination of poverty and its contingent evils would make it comparatively easy to control, and practically to eliminate, such diseases as syphilis, tuberculosis and rheumatic fever. It is only because of ignorance and apathy that diphtheria is not already controlled.

This may seem an expensive programme, but any expense directed to preventing disease is a good national investment.

Organization.

Under the heading of "Prevention" a few matters involving organization are listed. These and others mentioned elsewhere make it clear that an adequate health service will need most careful organization. There must be sufficient elasticity to meet any advance in knowledge or any other emergency, and to deal effectively with it. No cumbersome, unwieldy, administrative machine, which is incapable of acting swiftly or of accepting responsibility, will serve. There must be a complete absence of any sort of dictatorship from either above or below.

It is quite obvious that the government must have the full cooperation of doctors, dentists, and a large number of other experts. It is equally obvious that if those employed in the service are to give the necessary time and attention to their work, and to their own physical and mental fitness, they must be paid a sufficient salary. To ensure equitable staffing and facilities for all localities, hospitals *et cetera*, a Commonwealth controlling body will be necessary. Since there must be coordination of non-medical with primarily medical projects, a central coordinating body will be needed. On the other hand, local administration, with full authority and responsibility, is essential to maximum efficiency in any department, locality or unit.

Executive officers should be specially trained in health matters. In no circumstances should a medical officer hold a purely administrative post. All such posts should be filled by election and should not carry a salary in excess of that paid to medical officers. Every other means should be used to avoid the creation of a single unnecessary administrative post, so that there may be the utmost simplicity of organization. This will produce greater efficiency and will combat the tendency of the administration to grow complex and, at certain points, remote.

No attempt is made here to outline a sample organization, as there are many possible ways of introducing the service. It may be started in certain areas and later extended to others. Social reforms may be started prior to nationalization of medical services, and so on. However, the type of organization which is required is essentially cooperative, as indicated below.

The Problem of Availability.

In passing it should be noted that a separate set of problems exists in the making of health services available to the native populations of attached or mandated territories. A survey of the remainder of our own aborigines will show that it may be stated, as a guiding principle, that no government is entitled to take over the management of any native community, unless it is prepared and determined to provide adequate educational and health services forthwith.

Within Australia the chief factor affecting availability is the economic one. At present the services of doctors, given free to non-paying patients, are paid for by an overcharge on the rich. Even so there is always a section of the poorer classes who cannot obtain service, free or otherwise. For example, the "free" service at hospital outpatient departments can be quite expensive for the patient who has to forfeit a half or whole day's pay to get it. Then there are the employees to whom the venereal disease clinic is not available because it is not open when the patient is free to attend. Application for time off in these cases would probably mean loss of employment. There is also the wage-earner to whom hospital facilities are not available because of helpless dependants, and the mother with a family of young children whom she cannot leave because there is no one to look after them. In these cases even pregnancy and confinement can be an acute embarrassment. This situation is commonly found amongst the middle classes in the economic scale also, and is a definite factor in retarding our needed increase of population. All too frequently desirable pathological or radiological investigations are not available because they are too expensive. It is clear that a service may be provided without its being available to everyone.

The lack of hospital accommodation, which is a disgrace to each of the governments concerned, becomes greater

year by year. Even if sick people could be properly nursed at home it would not be fair to ask a woman to be confined in her home. In any case there are not sufficient doctors and nurses to give proper attention to patients confined to bed at home, and the shortage of nurses is now an acute problem. Moreover, there is a shortage of lay staff, at hospitals and institutions, which is also only partly due to war conditions. Poor pay and poor conditions are the main causes of all these shortages. They are also responsible for poor quality service. Any sort of cheapskating economy in a health service is false economy and is incompatible with the availability of the service to everyone.

Another aspect of the problem in Australia is a small population scattered over a huge area. But with the perfecting of wireless communication and of air travel there is no longer any valid reason for service not being available, even in the most isolated spots.

From what has been written here and in the previous section, it is clear that to make an adequate service available to everyone means much more than nationalization of the medical service. It means reforming our educational system and, indeed, our whole social system. But the magnitude and complexity of the task do not mean that it is impossible or even impracticable. Given an early lead by the profession, the full backing of all our politicians, and the cooperation of the auxiliary services, there is no doubt that the public would fully support its leaders and within a generation would have a health service which would produce optimum national health.

A Practicable Service.

The following brief outline suggests a service which would prove practicable and would fulfil the objectives set out above.

Country Areas.

In the remoter parts there would be a series of strategically placed hospitals with one or two doctors, and at least one ambulance plane, available to each. Although small, these remote hospitals would be staffed and equipped for dealing with any probable emergency. Equipment would include effective transmitting and receiving sets.

Patients who could not be wholly treated at such remote hospitals would be evacuated to the nearest rural hospital. Each of the latter would be staffed by at least three doctors and a resident trainee. Where there were only three doctors one must have specialized in surgery and be a competent radiographer; another must have specialized as a physician and be a capable anaesthetist; while the third must have specialized in obstetrics and be able to do routine pathology investigations. With more doctors these specialty and auxiliary services would be more easily provided. This would ensure a fairly complete service for the area. Patients requiring lengthy or specialized treatment or investigation would be transferred to the appropriate base hospital.

Urban Areas.

In urban areas, instead of the flying doctor, would be the factory doctor attending to one or more industrial units, and the emergency doctors at the casualty hospitals. The counterpart of the rural hospital would be the suburban hospital, similarly staffed by a group of doctors selected to give as complete a service as possible to the area covered. The medical staffs of rural and suburban hospitals, together with the emergency, flying and factory doctors, would comprise the equivalent of the present general practitioners.

The casualty hospitals would serve the purpose of a clearing station and would be sited accordingly. They would be staffed and equipped to do all types of emergency work, including resuscitation, operation and treatment of shock, but would have only sufficient beds for those who could not be moved safely. Outside the cities there would be base hospitals for the treatment of chronic, infectious and other special diseases, and for the investigation of obscure conditions. Sanatoria and convalescent depots would not necessarily be in urban areas.

General.

Wherever there was need, dental, pre-natal, child welfare and other clinics, crèches, laboratories, radiological centres and similar services would be provided. Consultation rooms would normally be at the hospital. Where the latter was distant from the main body of people a consulting centre should be equipped at the most suitable site.

Treatment of patients at home should be reduced to a minimum. Out-patient departments would be practically abolished, since they are necessary only where proper hospital accommodation is not available and/or treatment is unsatisfactory. Where the latter is not merely a confession of failure by the doctor, the patient should be cared for in a hospital for chronic illness where he could work according to his ability.

Each doctor or group of doctors would be responsible for the health of the people in the area concerned.

Administration.

Flying doctors and the nearest rural hospital, emergency and factory doctors and the adjacent suburban hospital or hospitals, and base hospitals, singly or in groups, could each comprise a unit attending to its own internal affairs and conferring with other units as required. A committee representative of all sections of the unit should be the executive body. There would also be a coordinating committee for each State or similar area. It should consist of a representative of each of the various units and each of the various categories of staff. It would frame the general policy for the area from reports and estimates submitted by the constituent units.

The Commonwealth administrative staff should be as few as possible. There should be an advisory panel or committee representing all areas and aspects of the service, including building, engineering, supply, flying doctors and hospitals. An executive committee in conjunction with government representatives would frame the general policy. Each of the above representatives should be elected democratically. If possible there would be no "appointments".

Teaching and Training.

Teaching and training must be extended and modified to meet the requirements outlined above. The selection of teachers is of the utmost importance. It has never been realized, apparently, that the only people competent to judge the worth of a teacher are his students. At the end of each year every class should report on the suitability of its teacher. At present far too many student hours are wasted attending compulsory, useless lectures. No university lectures should be compulsory. If the teachers are satisfactory the students will attend.

There must be a revision of the curriculum. Botany and zoology could be replaced by a course of lectures and demonstrations in tropical medicine, given later in the course. The present course in physics should be replaced by a short course in biophysics. Anatomy and dissection should be started in first year. Some instruction in statistical methods should also be given in first year. The amount of time given to both biochemistry and *materia medica* could be reduced. The teaching of histology and pathology should be combined. The early study of physiology should be limited to its bearing on practical medicine, and that of pathology to the understanding and diagnosis of disease. Further study of these two subjects would be done later, as required. More time would be given to the study of prevention and psychiatry.

There is no need for the student to memorize the signs, symptoms and treatment of obscure or chronic conditions. They can be determined at one's convenience. Similarly, the treatment of most disabilities can await the establishment of diagnosis, and does not demand the memorizing of facts, charts, scales and figures. But more attention must be given to examination, observation and diagnosis, so as to prevent unnecessary hospitalization and loss of manpower. The treatment and diagnosis of emergencies must be known infallibly, as must the action and dosage of drugs used in or giving rise to emergencies.

A student should be accepted for training only on the recommendation of his previous teachers. With the applica-

tion for admission to the service he should present a statement of his reasons for applying, and his conceptions of what medical service involves. On acceptance a salary sufficient for his needs would be paid to each student, and continuance of training would depend on progress and conduct. These matters would be decided by a committee composed of undergraduates and graduates.

At the end of two years (possibly less), completed satisfactorily, ward work would commence and would continue for at least three years, together with lectures and demonstrations. Set lectures would then cease, but the student would continue reading in certain fixed subjects and in others as desired for a further two years. The first of these would be spent as a resident officer at a base, suburban or rural hospital. The second would be spent as junior assistant attached to a rural or suburban hospital, or in three months of residence at a maternity, a casualty, an infectious diseases and a mental hospital. This would complete the first part of the course and the three degrees of Bachelor of Medicine, Bachelor of Surgery and Bachelor of Medical Science could be conferred on the deserving.

Study and training would continue for at least another three years as part of the course. Some of the trainees, in the first of these three years, would act as emergency, factory, and flying doctors; others would become senior assistants attached to rural or suburban hospitals. In the next two years all of the above group would transfer to base hospitals for completion of training in medicine or surgery. Those intending to specialize in obstetrics, infectious diseases, psychiatry, gynaecology *et cetera* would spend the three years attached to an appropriate hospital, for the first year at least as resident officers. Those who wished to become biochemists, or radiologists, or pathologists *et cetera* would commence work in the appropriate hospitals, laboratories, centres or institutes.

The full course would thus take a minimal time of approximately ten years. Procedure from stage to stage would depend on the necessary standard of competence being attained. Those who completed the course satisfactorily could be given an appropriate degree, such as Master of Surgery, Master of Medical Science or Master of Medicine. No further degrees would be conferred by the Faculty of Medicine, but those members with the necessary desire and special ability would be selected as consultants, directors or teachers, or to carry out special work. Subsequent training and teaching would consist of special lectures and demonstrations to ensure that every member was keeping abreast of recent advances in knowledge and technique.

Objections.

Finally, a few remarks about the objections usually advanced by those who oppose a national health service. It will be found, when one makes an honest effort and becomes informed of the true state of affairs, that the alleged objections are almost wholly invalid.

The statement that medical progress is dependent on the stimulus of competitive private practice is not true. It is, moreover, a gratuitous insult to the army of scientific workers who willingly spend their lives in an unremitting search for knowledge for a salary that is far too often inadequate. The implication that doctors need the spur of financial or other reward to make and keep them fully efficient should make every member of the profession feel ashamed.

The Australian Army Medical Corps, which is regimented to a high degree, is a salaried service. It is also a service in which there is almost a complete absence of choice of doctor by the patient and of patient by the doctor. Yet it would be absurd to suggest that the health of the army was not very well maintained or that members of the Australian Army Medical Corps tended to lose initiative, enterprise or efficiency.

Whether in a national service in peace-time there will be detrimental political interference or obnoxious bureaucratic control depends entirely on the profession. If the members cooperate intelligently in the setting up of an adequate, available service, they will determine control of it.

How the service is to be financed is a matter for the Government, and it is right that the money should come from the whole community. But whether it is collected as part of general taxation or in some other way is no concern of the profession. It is the profession's concern, however, to see that the poor are not further impoverished.

While the cost of such a service as has been outlined may be high, it would not be long before the expense was manifestly justified. With the institution of a better social system and a general knowledge of dietetics, the vitamin deficiency group of diseases would practically vanish. With better education, assured work and physiological fulfilment, psychiatric cases would decrease enormously. The study and practice of other aspects of prevention would rapidly decrease the number of other illnesses and disabilities.

Actually, in the scheme outlined in this article, there would be a minimum of regimentation, while there would be almost as great a choice of doctor and patient as there is at present. The only valid objection is that the doctor would be limited to a salary instead of being free to try to make a large income from his patients.

Conclusion.

A concerted, whole-hearted effort by the medical profession, primarily, and by the politicians and the people could rapidly give to Australia a national health service which would be an example to, and the envy of, the rest of the world.

CURARE IN ANAESTHESIA: A PRELIMINARY NOTE.¹

By H. J. DALY and S. V. MARSHALL,
Sydney.

CURARE is a drug of sinister reputation, which has in consequence been accorded a tardy recognition in the field of therapeutics. Various highly coloured accounts of its lethal properties have been promulgated from time to time, so that any proposal for its application in the treatment of the human subject has generally been received with aversion and horror. Nevertheless, it has had a certain experimental vogue during the past seventy-five years, and this has led up to its use in man for the treatment of some spastic disorders, and to a limited extent of tetanus. These cautious adventures in the clinical use of the drug have recently culminated in its extensive and successful trial as an adjunct to the convulsive therapy of certain mental disorders, with the object of preventing associated traumatic complications. Finally, it is now being employed in anaesthesia to obtain relaxation in the absence of profound narcosis.

Hitherto the available specimens of curare have been of variable potency and purity. In the past few years, however, a standardized preparation, "Intocostrin" (Squibb), has appeared on the overseas market, and this fulfils the essential desiderata of certainty and controllability of action. A better understanding of the pharmacological effects of the drug has thus been permitted, together with a due appreciation of the precautions which must attend its use. It is now apparent that, like so many other potent agents employed in medicine, this novelty has such valuable properties as to justify its clinical use in spite of the hazards involved. When there is a proper understanding of their nature, these hazards become of minor significance.

Curare is derived from a wide variety of plants and creepers indigenous to the Amazon Valley. The natives make a decoction from the bark, and this is concentrated to a gummy consistency by prolonged boiling. Much secrecy and ceremony accompany this procedure, a jealously guarded prerogative of the witch doctors. In due course, and by devious means, the crude product reaches the outer world, there to be the subject of much curiosity

¹ Based on a paper read before a meeting of the New South Wales Branch of the British Medical Association at Saint Vincent's Hospital, Sydney, on October 18, 1945.

and romance. Thus in the past we have been virtually at the mercy of native chemists with regard to the potency and reliability of any specimen.

Here romance of another kind intervenes. Richard Gill, of New York, the victim of a spastic disorder, heard of curare and determined to elucidate its mysteries. Recovering sufficiently to travel, he went to South America and spent many months with the Javarro Indians in the pursuit of its lore.⁽¹⁾ In due course he returned with large supplies of the raw material, from which the present biologically standardized preparation has been made. This has since been extensively studied in a variety of clinical applications, so that now a reasoned assessment of its utility is available.

Pharmacology.

Curare ($C_{10}H_{17}NO$) relaxes and paralyses striped muscle by an action at the myoneural junctions, presumably through the suppression or inactivation of acetylcholine. It has a progressive action on the somatic musculature somewhat resembling that of the general anaesthetic agents. The muscles of cranial innervation are first affected, next the peripheral muscles, then the intercostal muscles, and finally the diaphragm. In therapeutic dosages it has little if any effect on plain or cardiac muscle. Excessive dosages not only produce respiratory paralysis, but also favour bronchospastic manifestations and peripheral vascular failure.

The standard preparation contains 20 milligrammes of curarine per millilitre, and the average effective dose is about 60 milligrammes (three millilitres) given intravenously. This quantity will usually procure extensive somatic paresis without respiratory paralysis. Despite an apparent torpor the patient is acutely conscious, so that no painful interference is warranted in one so virtually helpless. When this dosage is used the maximum effect is evident in about five minutes, and during the next fifteen minutes a gradual recovery of muscular power occurs. Should diaphragmatic paralysis develop, artificial respiration must be applied during the few minutes for which it will persist. Prolonged apnoea may necessitate the intravenous administration of "Prostigmin", a dose of 0.25 milligramme usually being sufficient. The response to this true antidote is almost instantaneous.

Curare appears to have no ill effects on the cardiovascular system when used in recommended dosages. So far no evidence of hepatic or renal damage has been reported in connexion with its use, and no alterations in the constitution of the blood have been observed.

Despite beliefs to the contrary, curare is not in any way an anaesthetic. If it produces loss of consciousness, this must be attributed to anoxæmia from impaired respiration, for which the remedy is obvious. The conscious subject will tolerate relatively larger dosages than those required for the production of comparable effects during general anaesthesia. Ether especially appears to increase the action of curare. Although attempts have been made to evaluate dosage on a basis of body weight, it seems that, as is the case with the general anaesthetic agents, an approximation is sufficient for practical purposes.

Use in Anaesthesia.

The proposal to use curare as an adjunct to general anaesthesia was first received with much reserve, but finally H. R. Griffith, of Montreal, Canada, gave it a trial in 1942.⁽²⁾⁽³⁾ He first reported 25 cases with favourable conclusions. Since then it has been used widely in the United States of America,⁽³⁾⁽⁴⁾⁽⁵⁾ and to some extent in England,⁽⁷⁾⁽⁸⁾ generally with satisfactory results. Our experience covers 30 cases to date, and although the series is too small to warrant far-reaching conclusions, the results obtained have been decidedly encouraging.

The series was begun at Saint Vincent's Hospital, Sydney, on August 11, 1945, and since then the work has been continued both there and in other institutions. We embarked on this adventure with much trepidation, and surgeons, too, were extremely cautious in their reception of our proposals. The start was finally made under dental auspices, a circumstance somewhat reminiscent of the

introduction of general anaesthesia just one hundred years ago. Confidence was soon—indeed, almost immediately—established, and gratifying progress has since been made. As a result we feel that further experience will give this novelty a secure and permanent place in surgical practice.

Stated briefly, the following considerations govern the use of curare in general anaesthesia.

Objects.

The objects of the use of curare are as follows: (a) to procure full relaxation during relatively light anaesthesia; (b) to minimize the toxic effects of general anaesthetic agents; (c) to facilitate tracheal intubation, (d) to assist resuscitation, especially in the presence of asphyxial rigidity or convulsions.

Indications.

Indications for the use of curare in anaesthesia are as follows: (a) for strongly built patients generally; (b) in upper abdominal surgery; (c) in trismus and allied conditions; (d) for very ill patients, when deep anaesthesia is deleterious; (e) in surgery requiring complete suppression of respiration; (f) in toxic or asphyxial convulsions, especially to aid resuscitation; (g) with cyclopropane, or nitrous oxide, oxygen and ether anaesthesia, especially when preceded by "Pentothal".

Contraindications.

The use of curare is contraindicated, (a) in *myasthenia gravis*, (b) if training in specialized anaesthesia has not been adequate, and (c) when facilities are inadequate to meet all contingencies.

Comment.

The use of curare in anaesthesia is essentially an auxiliary procedure. Narcosis to at least plane II of the third stage (Guedel) must be induced and maintained either before or after the initial dose of the drug is given, otherwise any severe trauma may result in shock of reflex or neurogenic origin. It is easy to have the patient too lightly anaesthetized without realizing it, since the various eye signs may be abolished by the somatic paresis. Under present conditions the drug is not suitable for general use, because certain special facilities and precautions are necessary. The cost of the preparation, too, makes its restriction to special cases almost imperative.

Reports of Cases.

While results in some of our cases have been inconclusive, in the majority remarkable benefit has been obtained from the use of the drug. So far we have had no unduly alarming experiences. The following brief reports are a selection from our more striking cases.

CASE I.—Z.Q., a female patient, aged thirty-five years, had sustained compound multiple fractures of the mandible, and the estimated risk was "B". Curare was used, in conjunction with "Pentothal" and either oxygen or nitrous oxide and oxygen given by the endotracheal method, on four separate occasions for dental extractions, manipulation and splintage of the jaw. On a fifth occasion no curare was used, and this occasion was regarded as a control. Premedication consisted of morphine sulphate (eight milligrammes—one-eighth of a grain) and atropine sulphate (0.64 milligramme—one one-hundredth of a grain) given hypodermically about one and a half hours before the induction of anaesthesia. The initial dose of curare (60 milligrammes) was given in two fractions during a period of about two minutes shortly before the administration of "Pentothal" was begun. "Blind" tracheal intubation was performed, and the gas machine was then attached to the Magill tube. On the first occasion supplementary oxygen only was so given; on the others nitrous oxide and oxygen were used in equal proportions. Meanwhile the fractional administration of "Pentothal" was continued, and more curare was given as indications arose. The duration of the operations was from one to one and a half hours, and the total dosages of curare varied accordingly between 60 and 100 milligrammes.

Tracheal intubation was considerably aided and the resultant coughing greatly reduced in violence. Relaxation of the masseter and associated muscles was perfect. Rather pronounced submental tugging was evident on the first two occasions, when relatively heavy dosages of curare were

used. Although respiration was shallow, no alarming depression occurred. The pulse rate and volume were virtually unaltered throughout. "Pentothal" requirements were greatly reduced on the first four occasions, the total dosages ranging from 0·85 to 1·2 grammes. On the fifth occasion, when no curare was used, about twice the quantity of "Pentothal" (2·0 grammes) was required for a similar duration of anaesthesia, while violent coughing was troublesome from time to time. The post-operative course on all occasions was uneventful.

CASE II.—M.B., a female patient, aged seventy-one years, was suffering from cholecystitis, chronic bronchitis and cardio-vascular degeneration; the estimated risk was "C". She was considered unfit for cholecystectomy under either deep general or spinal anaesthesia, while local analgesia was not favoured. Premedication consisted of "Omnopon" (22 milligrammes—one-third of a grain) and scopolamine hydrobromide (0·43 milligramme—1/150 grain) given two hours before the induction of anaesthesia. This was excessive, and the consequent respiratory depression greatly hindered the production of full anaesthesia with cyclopropane, in its vehicle of nitrous oxide and oxygen. Curare was therefore given, the initial dose of 40 milligrammes over a period of five minutes being followed in about fifteen minutes by a further 20 milligrammes. The result was remarkable; relaxation replaced rigidity, not only enabling the surgeon to proceed in comfort, but also permitting the institution of adequate respiratory exchanges by the intermittent manual compression of the rebreathing bag. The patient's condition was good throughout the operation, and her subsequent progress, contrary to expectations, was uncomplicated.

CASE III.—G.G., a male patient, aged twenty-eight years, was suffering from Buerger's disease. The estimated risk was "A". He was a powerful, strongly built man, in whom the operation of lumbar sympathectomy was in progress. The induction of anaesthesia with ethyl chloride and ether had been most stormy. In all probability the preliminary atropine had been given too late. Tracheal intubation was performed with much difficulty, and despite the further exhibition of ether in maximal quantities, relaxation was inadequate and straining was persistent.

Curare was therefore given in divided doses of 20, 20 and 10 milligrammes, over a period of fifteen minutes, with excellent results. Meanwhile nitrous oxide and oxygen, in equal proportions, were substituted for the ether, and this sufficed for the remainder of the operation, covering an additional thirty-five minutes. During this time the patient's pulse rate fell from 100 to 84 per minute. His condition was good at the end of the operation, and the subsequent course uneventful.

The relatively small dosage of curare required in this case illustrates the potentiating effect of ether.

CASE IV.—A.E.Y., a male patient, aged forty-one years, had an infected third lower molar tooth on the right side; the estimated risk was "A". He was a strong and powerful man. The condition had been in progress for five days, and severe trismus was present. Ordinarily deep anaesthesia would have been required to provide access for the extraction, involving the use of at least 1·0 gramme of "Pentothal". Premedication consisted of morphine sulphate (eight milligrammes—one-eighth of a grain) and atropine sulphate (0·64 milligrammes—1/100 grain) given about thirty minutes before hand. Sixty milligrammes of curare were injected over a period of one minute, and five minutes later the administration of "Pentothal" was begun. A total of 0·25 gramme was given in six minutes, and the operation was then performed, relaxation being adequate and access easy. Within fifteen minutes the patient was conscious, and he was fit to go home within an hour.

A most remarkable reduction in the quantity of anaesthetic agent required is demonstrated by this case.

CASE V.—Mrs. B., aged seventy-three years, was suffering from cholecystitis. She was a rather frail old lady, who had recently recovered from pneumonia. Fairly advanced vascular hypertension was also present, but she was considered fit for cholecystectomy. The estimated risk was "C". Premedication consisted of morphine sulphate (eight milligrammes—one-eighth of a grain) and atropine sulphate (0·64 milligramme—1/100 grain), given about forty-five minutes beforehand. Induction was performed with nitrous oxide, oxygen and cyclopropane. A Magill tube was then inserted, with resultant coughing and slight cyanosis, but control in plane II, third stage, was quickly regained. Although relaxation was adequate with this relatively light level of anaesthesia, 20 milligrammes of curare were given shortly after the abdomen was opened to obviate any unexpected necessity for "pushing" the anaesthetic.

Conditions were satisfactory until shortly before closure was begun, when the cyclopropane cylinder ran empty. A further 40 milligrammes of curare were therefore given, and within five minutes sufficient relaxation for easy closure was obtained. Meanwhile the patient was moving her head and phonating from time to time. The operation was completed without further incident. Almost immediately after removal of the face mask the patient vomited and was sufficiently conscious to recognize her doctor. Her subsequent progress was uncomplicated.

This case illustrates the value of curare in anaesthesia which inadvertently had become light.

Conclusion.

Curare is a useful adjunct to general anaesthesia, especially for seriously ill patients or in "poor-risk" cases. It greatly reduces the amount of anaesthetic agent required, thus minimizing not only toxic effects but also the deleterious consequences of prolonged narcosis. It is no substitute for adequate anaesthesia, but it obviates the necessity for profound depth. A nice balance between anaesthetic dosage and that of curare must be established in order to get the best results. Training, experience, adequate facilities and good judgement are essential requisites for its safe and satisfactory use.

Acknowledgements.

We are indebted to Commander L. H. Wright, United States Navy, a member of the firm of Messrs. E. R. Squibb and Sons, for a generous supply of "Intocostrin" for clinical trial here. In addition we wish to thank Mr. Frank Carberry, and Dr. Douglas Miller, Dr. J. S. McMahon, Dr. Haddon Kemp and Dr. B. T. Edye for allowing us to embark on this venture and for giving us permission to publish the foregoing respective case reports.

References.

- (1) R. Gill: "White Water and Black Magic", 1941.
- (2) H. R. Griffith and G. E. Johnson: "The Use of Curare in General Anaesthesia", *Anesthesiology*, Volume III, July, 1942, page 418.
- (3) S. C. Cullen: "The Use of Curare for the Improvement of Abdominal Muscle Relaxation during Inhalational Anaesthesia", *Surgery*, Volume XIV, August, 1943, page 261.
- (4) H. R. Griffith: "The Use of Curare in Anaesthesia and for other Clinical Purposes", *The Canadian Medical Association Journal*, Volume L, February, 1944, page 144.
- (5) F. Cole: "The Use of Curare in Anaesthesia: A Review of 100 Cases", *Anesthesiology*, Volume VI, January, 1945, page 48.
- (6) S. C. Cullen: "Curare in Anesthesia", *Surgery*, Volume XVIII, July, 1945, page 45.
- (7) H. R. Griffith: "Curare as an Aid to the Anaesthetist", *The Lancet*, Volume II, July 21, 1945, page 74.
- (8) F. B. Mallinson: "Curare in Anesthesia", *The Lancet*, Volume II, July 21, 1945, page 75.

CONGENITAL CARDIAC DEFECTS ASSOCIATED WITH MATERNAL RUBELLA.

By L. P. WINTERBOTHAM,
Brisbane.

THE reports by N. M. Gregg and by C. Swan *et alii* of their investigations into cases of congenital cataract, deafness and cardiac and other defects which occur apparently as a result of German measles attacking the mother during the first four months of her pregnancy, were responsible for my suggesting to the superintendent of the Blind and Deaf School of Brisbane the desirability of an examination of the deaf children at this institution, with a view to determining whether congenital heart lesions coexisted with their deafness.

My attention had already been drawn by him to the remarkable increase in the numbers attending the deaf section of the school. In 1945 there were 121 pupils on the roll; the number of new scholars admitted each year averages seven; but last year a sudden influx occurred when the children born in 1938 were brought for registration. Forty-eight new pupils were enrolled, and from their parents the superintendent was able to obtain a history

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of maternal rubella in 34 cases. The results of the medical examination of this group proved of considerable interest.

Of the 121 children on the roll, 116 were available for this investigation. None of the blind children examined had any heart lesion, but of 109 deaf children, 19 were so affected (17.4%).

Those with cardiac defects can be classified as follows: (i) Eleven of the 34 denoted above, whose parents gave a history of maternal rubella during the first four months of pregnancy; (ii) eight of 75, in relation to whom no history of maternal rubella could be obtained; (iii) 12 of 47 children born in 1938 (one was away ill); (iv) five of 43 children born before 1938; (v) two of 19 children born after 1938. Dr. Felix Arden, superintendent of the Brisbane Children's Hospital, also examined these children and corroborated the above findings.

Amongst such a number of cases the cardiac bruits naturally varied a great deal in intensity in the different subjects, but all were mainly basal. There was no history of rheumatic infection in any of them; but one of the oldest children had diffuse murmurs which we thought might have such an origin. All but one of the children look healthy and well-developed, and actively participate in school sports. None shows any signs of cyanosis or any outward evidence of cardiac abnormality. No X-ray examination was available.

Attention should be drawn to the fact that children are not admitted to the Blind and Deaf School under the age of four years and not unless they are medically certified as being in good bodily and mental health, so that the above percentages would not include any children who could not satisfy this standard, or any with congenital heart disease who did not survive their third year.

As congenital heart disease has been noted as occurring as the only defect in some children after maternal rubella, it was thought possible that deaths from this cause might show an increase in the different States following epidemics of this disease, and investigation brought to light the following interesting facts.

Statistics which show congenital heart disease as the specific cause of death are not available till the year 1940; but records since then are here reproduced (Table I), the total of deaths up to the age of twelve months being given.

If these figures were adjusted with the number of births in each year in each State, the deaths per 20,000 children born would be as shown in Table II.

The varied intensity, spread and virulence of epidemics in different years will obviously directly affect the number of congenital casualties of whatever kind caused by them, and if an epidemic occurs late in the year, it is likely that

the deaths (if any) occurring among infants as a result of it will affect two periods (years) of statistics. This is suggested as the possible cause of the large figure for deaths occurring in Queensland in 1941-1942 and in Victoria in 1940-1941.

As German measles is not a notifiable disease, no official records concerning it can be supplied by the health departments of the several States; this makes the securing of reliable information concerning epidemics a little difficult.

So far as Queensland is concerned, it is known that in 1937 and 1940 occurred the two principal outbreaks of rubella in recent years. As has already been stated, there was a considerable increase in the number of cases of congenital deaf-mutism in 1938, and the superintendent of the School for Blind and Deaf Children tells me that he is already getting a foretaste of the ill results of the 1940 epidemic in the increased number of deaf children born in 1941 now registering at the school. In the year 1941, deaths from congenital heart disease reached the highest figure so far recorded for Queensland.

In New South Wales there was a tremendous increase in the number of children absent from school on account of rubella in the year 1940; the numbers jumped from 1,000 in 1939 to 30,000 in 1940, and there was a lesser increase in 1942; this coincides with a large increase in the number of admissions to the New South Wales school for the deaf of children born in 1941, and it is to be noted that 53.4 per 20,000 births is the mortality rate for that same year.

In Victoria there was a considerable increase in the numbers of admissions to the school for the deaf of children whose birth occurred early in 1941. The Health Department of Victoria quotes Dr. F. V. G. Scholes as stating that there were epidemics of rubella during 1939 and 1941. In both years increases in infantile cardiac mortality occurred.

Information concerning South Australia is chiefly derived from a letter from Dr. Charles Swan, in which he states that out of 101 cases of maternal rubella so far studied, which occurred between 1938 and 1944, 40 occurred in 1942; the next largest number was 20 in 1940. His remarks concerning this are as follows:

From these figures it would appear that, although the largest epidemic occurred in South Australia in 1942, the disease was also epidemic in 1939-40-41.

The infantile cardiac mortality rate reached its highest point for that State in 1943.

In Western Australia most of the congenitally deaf children affected by maternal rubella were born between April, 1940, and June, 1941, and it will be noted that the mortality figures for this State reached 52.6 in the former year.

TABLE I.

Year.	Number of Deaths.					
	Queensland.	New South Wales.	Victoria.	South Australia.	Western Australia.	Tasmania.
1940	40	102	80	25	24	10
1941	57	138	89	20	23	7
1942	52	107	81	27	20	6
1943	41	128	75	38	19	10
1944	50	141	65	21	21	10

TABLE II.

Year.	Number of Deaths per 20,000 Births.					
	Queensland.	New South Wales.	Victoria.	South Australia.	Western Australia.	Tasmania.
1940	39.2	41.2	51.2	41.0	52.6	40.0
1941	53.0	53.4	51.8	36.4	45.4	26.8
1942	49.2	40.6	44.6	47.8	40.4	22.6
1943	34.0	44.6	58.4	57.8	36.2	35.8
1944	40.8	47.2	33.0	31.6	38.6	38.4

TABLE III.

State.	1938	1939	1940	1941	1942	1943	1944
New South Wales	546	1,166	30,228	499	3,320	743	376
South Australia	118	2,233	1,237	607	666	75	102

It is admitted that the above figures and facts are not conclusive evidence that the increase in deaths from congenital heart disease was due directly to maternal rubella; but the coincidence is, to say the least, remarkable—in each State the figures jumped up over the 50 mark.

It would appear that in two States only (New South Wales and South Australia) are statistics available to account for the non-attendance of children at school, and these two States have furnished the figures relating to absences due to German measles shown in Table III.

From these figures it will be seen that if the congenital cardiac mortality rate has as one of its factors the incidence of epidemics of rubella in the community, there should have been a large increase in New South Wales in 1941 (and there was), and again a lesser increase in 1943 (and this was so also); but the increase in this rate to 47.2 per 20,000 births in 1944 was therefore unexpected and cannot be thus accounted for.

TABLE IV.
Numbers of Children Annually Born Deaf.

Year.	Children Born Deaf per 10,000 Total Births.
1900	3.3
1901	3.4
1902	4.9
1903	3.1
1904	5.6
1905	2.9
1906	7.1
1907	2.7
1908	5.4
1909	3.9
1910	6.1
1911	7.0
1912	2.6
1913	3.5
1914	4.0
1915	4.9
1916	8.4
1917	3.5
1918	4.0
1919	4.8
1920	5.3
1921	6.8
1922	4.0
1923	5.0
1924	4.5
1925	6.9
1926	3.0
1927	5.0
1928	4.0
1929	5.4
1930	8.9
1931	3.3
1932	2.8
1933	2.3
1934	4.0
1935	5.6
1936	9.7
1937	5.2
1938	29.3
1939	4.4
1940	2.9
1941	10.6

With regard to South Australia, Dr. Swan's words have already been quoted, to the effect that from the South Australian figures the largest epidemic occurred in 1942 (with this the high mortality rate of 57.8 per 20,000 births in 1943 is in conformity); the disease was also epidemic in 1939, 1940, 1941. Yet from the figures obtained from the Education Department of South Australia it would appear that the epidemics of 1939 and 1940 were much more severe and should *ipso facto* have been productive of more congenital defectives than those of 1941 and 1942; yet apparently this was not so.

It is known that other factors than German measles are concerned in the causation of congenital cardiac disease, and it is possible that one or more became increasingly operative in New South Wales in 1943, thus accounting for the figure of 47.2 per 20,000 births. Further, the unavoidable lapse of time that has up till now occurred between the occurrence of the disease and the investigation of its results must inevitably affect to a greater or lesser extent the accuracy of the results; the longer the interval, the greater the difficulty of investigation.

In the report of the committee of inquiry appointed in New South Wales to investigate the question of the association of maternal rubella with various congenital defects in the offspring, a number of conclusions are arrived at (*THE MEDICAL JOURNAL OF AUSTRALIA*, July 28, 1945). The second of these reads as follows:

That cases of congenital defects following maternal rubella during pregnancy had occurred previously to 1940, but the relationship between maternal infection and the congenital defects had not been recognized.

Indirect support is given to this assertion by figures available from the Blind and Deaf School in Brisbane. The records allow the number of pupils present at the school, together with the year of birth of each scholar, to be computed as far back as 1900.

Epidemics of rubella are stated to recur every third or fourth year, and it is a remarkable fact that practically every fifth year for the past forty-two years there has been a wave of increase in the number of deaf children occurring in the community in Queensland.

The figures here given have been assessed for each year on the same basis—namely, the average of deaf children per 10,000 births for that year (Table IV):

The graph (Figure I) illustrates clearly the wave occurring as stated; but the sudden enormous increase occurring in the year 1938 will need some explanation. As

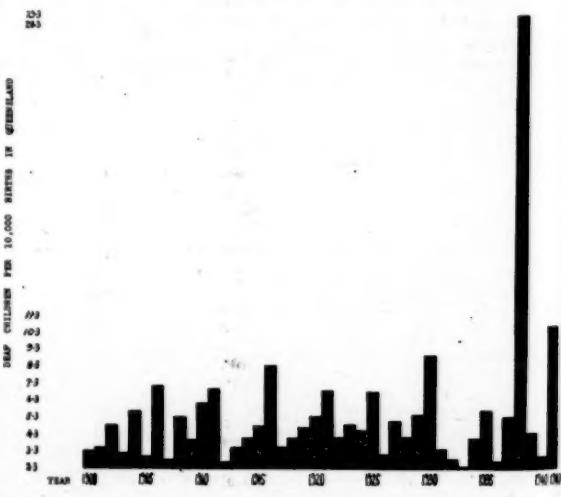


FIGURE I.

there are no records (official or otherwise) of the occurrence of rubella epidemics, the association of these periodic waves of increased deafness with German measles is by inference only, except for the years 1938 and 1941.

It is suggested that valuable evidence could be collected if head teachers of State and denominational primary schools obtained from the parents bringing their children for enrolment information as to whether the mothers whose period of pregnancy corresponded with the epidemics of rubella had in fact contracted this disease during the first four months of that pregnancy. This information concerning apparently healthy children would be valuable in itself, and subsequent examination of such children should be made by the school medical service (or other medical men) and would require that particular attention be paid to the state of their cardiac system and their intelligence quotient. A comparison of these results with others concerning children of the same age, but with no maternal rubella history, would complete the evidence from this source.

In view of the large sociological and economic questions involved, any reasonable investigation along these lines would be well repaid, for if rubella is admitted to be indubitably the cause of the congenital defects noted, active steps would have to be taken to limit its occurrence and spread, and if possible to counteract its evil effects, as recommended by the committee appointed to investigate the question in New South Wales in 1944. It is worthy of note that since November, 1945, rubella has been made a notifiable disease in Western Australia and, what is of still further interest, that the State Government of Queensland has decided on a survey of all school children born in 1941 to ascertain whether the mother had suffered from German measles during that pregnancy and, if so, what effect it had had on the child.

AGGLUTINATION TITRES WITH BACILLUS PROTEUS (OXK) IN HUMAN SERA.

By J. D. HICKS,
Major, Australian Army Medical Corps.

ALTHOUGH the mortality in New Guinea among soldiers who developed scrub typhus varied from 5% to 10%, and many of those who eventually recovered were gravely ill, a certain proportion of men exhibited only mild symptoms. The occurrence of a number of such cases of scrub typhus, with mild but typical clinical features, suggested that sub-clinical infections might occur in this generally serious disease.

With this point in view we obtained, towards the end of 1943, sera from 105 healthy men of an ordnance unit, and tested the ability of the sera to agglutinate a suspension of the organism *Bacillus proteus* (OXK). This unit had the highest incidence of typhus in the area, twenty-nine cases having occurred in three months. From these men the serum of only one gave a positive result, an agglutination titre of 1 in 320. In the remaining sera the agglutination titre was less than 1 in 160, which we regard as the lowest positive reaction.

Two months previously this one man had an indefinite illness lasting about a fortnight, which culminated with his admission to hospital with "debility". He had weakness, lassitude and anorexia, but kept on trying to work, as his unit was very busy, and came to hospital only after his temperature had returned to normal.

While this case confirms our opinion as to the occurrence of relatively mild rickettsial infections, it cannot really be called subclinical.

The experiment was then extended to other groups of men to ascertain the range of reactions occurring in serum from normal healthy individuals, and to see if any difference could be found in the results obtained from groups which had a varying exposure to the chance of infection with scrub typhus.

The four groups we investigated were: (i) Civilian blood donors in Sydney—people who had no possible contact with scrub typhus. (ii) Men of the hospital, stationed in the same district as the ordnance unit, but amongst whom no cases of typhus occurred during the previous five

months. (iii) Men of the ordnance unit, in which twenty-nine cases had occurred in three months. (iv) Natives from a nearby labour camp, who naturally had been exposed all their lives to a greater risk of infection with the rickettsiae than any group of soldiers had been.

The series of tests was carried out by the one worker, who used the same suspension of *Bacillus proteus* (OXK) throughout, and the same technique. The whole series was spread, however, over about two months, each group being tested in batches of 20 to 40 specimens per day. The results of the four groups are compared in Table I.

TABLE I.
Weil-Felix Reactions (OXK) in Different Groups of People.

Titre.	1 Sydney.	2 Hospital.	3 Ordnance.	4 Natives.
0	2	2	2	1
1/20	39	36	22	7
1/40	49	59	65	73
1/80	6	3	15	17
Total	96	100	104	98

There is no significant difference between the results obtained in groups I and II. Statistical evaluation of the difference between groups I and III suggests that it is highly significant. (The probability, *P*, lies between 0.02 and 0.01, where $\chi^2 = 10.587$, and there are three degrees of freedom.)

The difference between groups II and III is quite as significant, and the Weil-Felix reactions of sera from the natives show an even more marked shift towards the higher titres of 1 in 40 and 1 in 80.

While this experiment demonstrates the range of reactions which may be expected in normal sera, the interpretation of the differences between the groups is a matter of some difficulty. It seems rather drastic to assume as definite evidence of subclinical infection the production of a titre of less intensity than that recognized as diagnostic of the clinical disease. However, in only 80% of a series of 500 cases of scrub typhus among patients treated at this hospital was a titre of 1 in 160 or higher obtained, and it is to be remembered that a rise of titre from 0 to 1 in 40 or from 1 in 20 to 1 in 80 during the course of the illness is taken by many workers to be a positive reaction. To declare that in a particular group of individuals a greater percentage of sera giving titres of 1 in 40 and 1 in 80 indicates a greater incidence of scrub typhus in that group does not seem warranted. Nevertheless, some support is lent to this postulate by analogy with similar findings in the agglutination reactions obtained in other diseases. Topley and Wilson⁽¹⁾ record studies in the normal agglutinins for the Salmonella groups of organisms in the sera of populations in various parts of the world. Increases in agglutinin titres for individual organisms in the serum of normal people corresponded with exposure to a higher rate of infection of the general population by that particular organism.

The reaction we have observed in these sera is to Proteus (OXK) and not to the aetiological agent of scrub typhus. Until we have a method for investigating a more specific anti-rickettsial response in sera, the significance of the above findings may remain in doubt.

A further problem arising out of this experiment is the question of the immunity or resistance of the native population of New Guinea to scrub typhus. Varying reports as to the occurrence of clinical cases among them have been obtained. Although in our experience only negative results were observed in Weil-Felix tests performed on sera from natives suspected of scrub typhus, Lieutenant-Colonel K. B. Noad, in his report in this issue of the journal, seems to place beyond doubt the fact that natives do develop typhus. Had the natives examined in this experiment acquired some degree of immunity to scrub typhus?

Acknowledgements.

I wish to thank Major R. J. Walsh for his kindness in sending me the sera from Sydney blood donors, and Captain C. H. Macphillamy, who performed the tests. The Director-General of Medical Services, Major-General S. R. Burston, has kindly given permission for the publication of this paper.

Reference.

⑩ W. W. C. Topley and G. S. Wilson: "The Principles of Bacteriology and Immunity", Second Edition, page 1208.

Reports of Cases.**TSUTSUGAMUSHI FEVER IN NATIVES.**

By K. B. NOAD,
Lieutenant-Colonel, Australian Army Medical Corps.

MUCH interest has been aroused recently in that form of tsutsugamushi fever which occurs in New Guinea and is known there and in the army as scrub typhus. Its incidence in natives has been the subject of much speculation. Von der Borch⁽¹⁾ states that he has never seen the disease in natives and that they are not troubled by mokka itch. Gunther⁽²⁾ discusses the subject at some length and concludes that "there is no serological proof that the disease occurs in New Guinea" (natives). Kohls, Armbrust, Irons and Philip,⁽³⁾ in reporting their observations on the epidemiology and aetiology of the disease, write: "no conclusive report of native infection has come to our attention". Many writers have postulated a natural immunity.

Some work carried out by Major J. D. Hicks, pathologist of an Australian General Hospital at Dobodura, New Guinea, in 1943-1944, and reported in this issue, appeared to support the theory of native immunity to the disease.

For these reasons the following case reports appear worthy of record. The first patient was supervised personally. The other records were obtained, together with the patients' serum, by the kindness of Major Peter Gill, of the Australian Army Medical Corps.

Corporal D., of the New Guinea Infantry Battalion, a Salamaua boy and a splendid type of native, was taken suddenly ill in the Kiarivu area on August 13, 1945. He had a rigor in which his temperature rose to 106° F., and he complained of headache, pain in the back and cough. Profuse rhonchi were heard throughout both lungs and his neck was found to be slightly stiff.

For the next few days he was treated with quinine and sulphamerazine, to neither of which his temperature responded, but maintained a general level of 103° F. His pulse rate varied from 100 to 116 per minute and his respirations were 30 to 36 per minute.

On August 16 generalized lymphadenopathy, but no eschar, was found. He was admitted to 2/11 Australian General Hospital, Aitape, on August 17, complaining of feeling "sik tumas". He was indeed very ill. He also complained of deafness.

On examination his temperature was 104.2° F., his pulse rate was 116 and respirations numbered 40 per minute. Examination of his heart revealed no abnormality. Profuse and loud rhonchi were heard throughout both lungs and he was shaken by a distressing cough. Generalized lymph glandular enlargement was present, but no eschar was detected. His spleen was enormous, reaching to the level of the left anterior superior iliac spine. It was very tender. He was given an intravenous injection of 10 grains of quinine dihydrochloride.

On August 18 a small but characteristic eschar was found in the left axilla. His respiratory rate had increased to between 40 and 50 per minute, the rise in rate being due in part to increasing abdominal distension. Despite further intensive sulphonamide therapy, signs of basal consolidation appeared in the lungs. His heart was clear and his

blood pressure was 95 millimetres of mercury, systolic, and 50, diastolic. Para-amino-benzoic acid therapy was begun with an initial dose of 4.0 grammes and then 2.0 grammes three times a day. His leucocytes numbered 5,600 per cubic millimetre, band forms being 3%, segmented forms 47%, eosinophile cells 3%, basophile cells 1%, lymphocytes 38%, and monocytes 8%. The serum protein content was 4.8 grammes per centum. Six hundred cubic centimetres of concentrated plasma were given intravenously.

On August 22 he was still very ill and early gallop rhythm was audible in his heart. His blood pressure was 95 millimetres of mercury, systolic, and 55, diastolic. The condition of the lungs was unchanged and cough was still distressing. Deafness had increased and was greater in the left ear than in the right.

Blood films had been examined every other day, and on August 21 *Plasmodium falciparum* parasites in an average density of one per field were found. Routine malarial therapy was begun.

On August 23 he had improved considerably and his blood pressure had risen to 110 millimetres of mercury, systolic, and 64, diastolic. Para-amino-benzoic acid therapy was suspended.

The Weil-Felix test with his serum gave a positive reaction for *Bacillus proteus* OXK in a dilution of 1 in 160. From then onwards his progress was uninterrupted and his temperature fell by lysis to normal on August 26.

He was allowed up on September 5. He had lost a great deal of weight and showed the muscular wasting so characteristic of typhus. His spleen had receded about two fingers' breadth from the level of the anterior superior iliac spine. His chest was clear. By September 6 the agglutination titre of the Weil-Felix reaction had risen to 1 in 840.

Private L., of the Second New Guinea Infantry Battalion, a native from Witu Island near Rabaul, was taken ill on August 21 at Kiarivu, where he had arrived thirteen days before. He complained of generalized aches and pains and shivering. He also had a cough with whitish sputum.

Lymphadenopathy was generalized, but the epitrochlear glands were not palpable. No abnormal physical signs were found in the chest. His spleen was enlarged to three fingers' breadth below the left costal margin. He was given routine malarial therapy, but without response; in fact his temperature rose to higher levels. He became afebrile on the twelfth day of disease. Malarial parasites were never found in the blood.

On September 8, nineteen days from onset, his serum agglutinated *Bacillus proteus* OXK in a dilution of 1 in 1,280.

Sergeant R., of the Second New Guinea Infantry Battalion, also a Witu Islander, was taken ill at Kiarivu on August 14, 1945. He complained of shivers, headache, backache and vomiting. He had a persistent cough, at first dry but later with whitish sputum.

On examination the inguinal, axillary, epitrochlear and cervical glands were found to be greatly enlarged, and his spleen edge could be felt the usual three fingers' breadth below the costal margin. No eschar could be found. Rhonchi were heard throughout both lungs. He was given routine malarial treatment without effect on his temperature, which became normal on the fourteenth day of his illness. Blood films were always negative. His serum did not agglutinate *Bacillus proteus* OXK.

These natives had been on a patrol which left Gwalip on August 2 and arrived at Kiarivu on August 8. A number of our own men were evacuated from that area with typhus about the same time.

At least two of these case reports prove that natives do suffer from tsutsugamushi fever in New Guinea. The third patient probably had a rickettsial infection also, despite the absence of eschar and a single negative response to the Weil-Felix test. It is to be noted that they were all coastal natives. One was a Salamaua boy and the others were from Witu Island. They were infected at Kiarivu, which is beyond the Torricelli Mountains. It is an interesting possibility that natives may have an immunity

to their own local strains and that these men encountered in the hinterland of New Guinea a strain to which they were not immune.

Acknowledgements.

I wish to thank Major-General S. R. Burston, Director-General of Medical Services, for permission to publish this report.

References.

- ⁽¹⁾ R. von der Borch: "Non-Epidemic Typhus", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1937, page 435.
- ⁽²⁾ C. E. M. Gunther: "A Survey of Endemic Typhus in New Guinea", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, 1940, page 564.
- ⁽³⁾ Glen M. Kohls, Charles A. Armburst, Edwin N. Irons and Cornelius B. Philip: "Studies in Tsutsugamushi Disease", *The American Journal of Hygiene*, Volume XLI, May, 1945.

COLLOID DEGENERATION OF THE SKIN: REPORT OF EIGHT CASES.

By T. M. GILBERT,

Major, Australian Army Medical Corps,
and

C. B. COX,

Major, Australian Army Medical Corps.
(From an Australian General Hospital.)

COLLOID DEGENERATION (sometimes known as colloid pseudomilium) is generally accounted a rare skin disease. E. A. Hand,⁽¹⁾ who recently described three cases from Australia, states that 51 cases had previously been reported in the literature. It is probably commoner, particularly in Australia, than these statistics would signify. However, the observation of eight cases during a period of three months in Borneo would seem to warrant their reporting, particularly as no case was observed in the skin practice of one of us (T.M.G.) among a similar group during two years at an Australian general hospital in a sunny part of Australia with a hot inland climate.

Clinical Records.

CASE I.—Private W., aged thirty years, complained of an eruption on the hands, present for three months. The rash was first noted shortly after his arrival at Morotai and appeared to be gradually spreading. It was itchy. Examination revealed widespread shiny papules with a peculiar translucent vesicle-like appearance, covering the backs of the hands. Puncture of the papules, however, yielded only a trace of blood and serum and the papule did not collapse. The surfaces of the papules were flat or dome-shaped and the colour a pale flesh. In a few petechial staining had occurred, apparently due to scratching. The patient was a dark-haired young man with a uniformly pigmented skin and no freckling.

CASE II.—Corporal S., aged twenty-four years, stated that his rash had first appeared twelve months earlier in New Guinea. He also stated definitely that the rash disappeared while he was home for twenty-four days' leave in southern New South Wales, but recurred soon after his return to the tropics. The eruption was itchy, particularly at night or when covered. Examination revealed multiple discrete papules with flat, shiny surfaces, of pale flesh colour or pearly hue. A trace of fluid was obtained on puncture. The lesions involved the whole of the extensor surfaces of the hands, forearms and arms to the level of the rolled sleeve. The patient had dark brown hair and well-pigmented skin.

CASE III.—Sapper B., aged twenty-three years, stated that his eruption had started in Western Australia three years previously. He reported it and was examined by a dermatologist, who excised a piece of skin. The patient was then returned to duty, but the eruption had continued to spread, more rapidly since he had been in "the islands". Examination revealed numerous pale pink, dome-shaped to almost conical papules. The conical papules appeared

to have a thickened but still translucent tip. The eruption was confined to the dorsum of the hands and was symmetrical, apart from an area about half an inch wide on the dorsum of the left hand, representing the former biopsy scar, where they were absent. The patient, who was the only blond in the group, declined another biopsy. The papules yielded little sticky fluid on puncture.

CASE IV.—Craftsman S., aged thirty-nine years, complained of what he called a "blistering" rash present on arms and forearms for six months. The onset had occurred in the far north of Queensland. He stated that he had lived in north Queensland all his life, but previously had been employed as a mechanic, whereas in the army he was a blacksmith and hence exposed to much hotter conditions. Examination showed the patient to be a man of medium dark colouring, with lesions similar to those described in other cases extending from the knuckles over the dorsal aspect of hands and forearms to the elbows.

CASE V.—Gunner C., aged thirty-three years, complained of skin trouble present for two and a half years. The eruption had first been noticed at Brisbane shortly after his return from the Middle East campaign. At first it remained stationary, but six months later, when he went to New Guinea, an extension occurred. It was still spreading slowly. Itching was slight. Examination revealed papules of the dome-shaped and conical types. As in the other cases, the majority of the papules were the size of a pin's head, but ranged up to the size of a split pea. The papules in this case and several others were so thick as to appear to form lichenoid plaques, the natural furrows of the skin dividing them. This process was always most advanced opposite the first interosseous space of the hand and proximal to the web. In the plaques the papules tended to be flattened, so that the lichenoid appearance was accentuated. In this case, in addition to the upper limbs, there was a plaque on the nape of the neck, and on the upper parts of the cheeks were a few small, creamy-coloured, discrete papules resembling those of ordinary milium. This patient was of medium colouring.

CASE VI.—Signaller T., aged thirty years, stated that his eruption had first appeared in north Queensland twelve months earlier. He had gone on leave to Victoria for one month, and during this period the rash had disappeared. It had recurred since his return to the tropics. Examination showed the patient to be a dark-haired young man, with an eruption on the extensor surfaces of hands and forearms, similar to those previously described. Gelatinous fluid was obtained on puncture.

CASE VII.—Private C., aged thirty-four years, stated that he had had a similar eruption in New Guinea, present for two months. This disappeared completely when he was posted back to Australia and did not reappear in the six months during which he remained there. He was taking "Atebrin" constantly during that period. The rash had recurred during the past fourteen days, following his return to the islands. Examination revealed the usual symmetrical eruption on hands and forearms. On both cheeks below the eyes were yellowish papules, looking like those of ordinary milium, but these yielded no discharge when punctured.

CASE VIII.—Private C., aged twenty-four years, had a rash on the backs of the hands, present for one month; the onset had occurred in "the islands". He stated that the rash was spreading and was itchy. Examination revealed the usual lesions.

Comment.

The clinical appearances, once recognized, are characteristic, particularly the symmetry, the limitation of the lesions to exposed areas, and the shiny, translucent appearance of the papules and their tendency to become aggregated in large plaques of licheniform appearance, with a raised, rough surface. A yellow colour, stated by some authors to be characteristic of the lesions, was completely absent. All lesions were flesh-pink to a waxy-white in colour, except a few isolated facial lesions, which resembled those of milium. Individual papules varied from the size

of a pin's head to that of a split pea. Few were larger than a match head. The plaque-like aggregations on the hands felt like a nutmeg-grater and suggested the rough skin of a horny lizard.

Differential Diagnosis.

1. Several of the patients were sent with a diagnosis of warts, and the condition has a resemblance to large aggregations of small warts. However, warts have a dull, brownish, irregular surface, whereas the surface of these papules was shiny and almost translucent. Warts also tend to greater variety in size.

2. The question of hydrocystoma, or sweat gland cysts, may be suggested by the deep vesicle-like appearance of the lesions and by their occurrence in an area where hyperhidrosis, tropical anidrosis, *miliaria rubra*, sudamina and other sweat gland anomalies are of daily occurrence. However, puncture of the lesions shows that their cyst-like appearance is deceptive. They contain only a trace of sticky mucoid or serous material and do not collapse on puncture.

3. The lichenoid plaques may also suggest some form of lichen, but the limitation to extensor surfaces and exposed areas, the absence of erythema and pigmentation, and the fact that papules individually have a rounded rather than a flat surface serve to exclude this diagnosis.

4. Finally, *amyloidosis cutis* must be considered. The distinction from colloid degeneration is impossible on clinical grounds, particularly as amyloidosis of the skin is not associated with chronic sepsis and can occur in otherwise healthy subjects. However, here the histological findings are decisive, the characteristic staining reactions for amyloidosis being absent.

Histopathology.

Biopsies were performed in Cases I, IV, V and VI, and in all these the skin displays similar histological appearances, with minor differences in the degree of pathological change. The outstanding feature of the sections stained with haematoxylin and eosin is the presence in the corium of rounded spaces containing pink-staining, structureless material, which tends to be arranged in strands or blocks, probably as the result of shrinkage during fixation. Most of this material is acellular, but in some of the masses a few elongated nuclei may be seen. It does not give the staining reactions of collagen or of amyloid tissue. The spaces in which it lies have neither endothelial nor epithelial lining, and they are separated from the epidermis by a narrow zone of normal connective tissue. The overlying rete pegs are flattened and the epidermis is raised and thinned, but the narrowing of this layer is nowhere extreme. No striking changes are to be seen in the cells of the epidermis, and hyperkeratinization is not a feature. The sweat glands and ducts and the pilosebaceous follicles appear normal. There is no evidence of inflammation in the intervening connective tissue.

Prognosis.

Nothing is said about prognosis in the available textbooks. Under army conditions it is impossible to follow up patients for a lengthy period, but the definite statement of three patients that the eruption disappeared rapidly under favourable climatic conditions is significant of a readily reversible process. Two of the patients showed improvement under treatment.

Treatment.

Several of the patients complained of severe itching, and treatment appeared necessary. Relief from calamine lotion was transient, so it was decided to try the effect of producing erythema and peeling, on the assumption that inflammation might promote absorption. A lotion containing resorcin (5%) and salicylic acid (5%) in spirit was applied twice a day until peeling occurred. All patients experienced relief, and in two a partial disappearance of the lesions was witnessed.

Etiology.

Treatment is not likely to be effective while the etiology remains obscure. However, several points regarding

aetiology are suggested by this series. The view quoted by Hand,⁽¹⁾ that the condition is more common in blonds, was not confirmed by us. Only one of our patients was a blond, and none of them showed evidence of freckling, skin atrophy, telangiectases, keratoses or other manifestations of chronic solar dermatitis. The subject reported by Arnold⁽²⁾ was a Korean, and this fact again suggests that deficiency of skin pigment plays no part in the causation.

On the other hand, it was clear that we were dealing with disease due to light sensitivity, since it was limited to those areas exposed to the sun's rays and maximal on the areas of greatest exposure. These, in the soldier, are the extensor aspects of the forearms and hands. His sleeves are worn constantly rolled above the elbow. The face and neck are largely protected by the broad-brimmed hat.

It is necessary to look for some other factor, a sensitizing factor. A suggestion as to the nature of this is conveyed in a recent report,⁽³⁾ in which administration of ascorbic acid is said to have brought about cure of a patient; ascorbic acid is known to be necessary for the normal formation of collagen. Although no tests to determine the ascorbic acid intake were performed on our patients, there is at least presumptive evidence that it was well below the optimum, as all patients had been for months living on tinned foods, fresh fruit and vegetables being unobtainable. Certainly, large doses of ascorbic acid would be worth trying in these cases.

Of other sensitizing factors there is no suggestion. It was thought that "Atebrin" might play a part; but two patients developed the disease in Australia before commencing to take "Atebrin", and one experienced a complete remission during six months in Australia, though he continued to take "Atebrin" during the period. There is, of course, the possibility of some sensitizing metabolic factor due to the high temperatures and constant excessive sweating, but this is pure speculation.

Summary and Conclusions.

Eight cases of colloid degeneration are described and clinical and pathological findings discussed.

A high incidence in the tropics is noted. It is worth mentioning that in the case reported by McLeod *et alii*⁽⁴⁾ the patient had spent a long period in Central Africa, and that Arnold's case occurred in Hawaii. The condition is considered to be due to (i) a photosensitizing factor, which may be deficiency of vitamin C, and (ii) the action of strong sunlight.

Blonds are not particularly susceptible.

The change is reversible, and the prognosis is not necessarily unfavourable.

Treatment consists of local application of a peeling lotion. Ascorbic acid is worth trying on theoretical grounds.

We offer our apologies for inability to reproduce photographs of the patients, but it was impossible to obtain these in a forward area.

Acknowledgements.

Thanks are due to Captain Schilink and Captain Eklund, who referred patients and removed specimens for biopsy, and to the Director-General of Medical Services for permission to publish this paper.

References.

⁽¹⁾ E. A. Hand: "Colloid Degeneration of the Skin", *Archives of Dermatology and Syphilology*, Volume XLIX, April, 1944, page 234.

⁽²⁾ H. L. Arnold: "Colloid Pseudomilia", *Archives of Dermatology and Syphilology*, Volume XLVIII, September, 1943, page 262.

⁽³⁾ S. S. Robinson and S. Tasker: "Colloid Degeneration of the Skin (Colloid Millum)", *Archives of Dermatology and Syphilology*, Volume LII, September, 1945, page 180; S. C. Way: "Colloid Millum, A Vitamin Deficiency Disease?", *Archives of Dermatology and Syphilology*, Volume XLV, June, 1942, page 1148.

⁽⁴⁾ J. M. H. McLeod, J. E. M. Wigley and J. Muende: "Notes on a Case of Colloid Degeneration of the Skin (Colloid Millum)", *British Journal of Dermatology*, Volume XLIV, May, 1932, page 257.

INTRAUTERINE FETAL DEATH DUE TO STRANGULATION OF THE CORD.

By C. H. JAEDE,
Mascot, New South Wales.

It is thought that the following case of intrauterine death due to strangulation of the umbilical cord should be recorded.

Clinical Record.

Mrs. I.K., aged thirty-two years, complained of a slight blood loss *per vaginam* on August 2, 1944. Prior to this her history during pregnancy had been uneventful. One slight abnormality might be noted—namely, that her systolic blood pressure was somewhat in excess of the normal maximum; but whilst this was between 160 and 150 millimetres of mercury, no other signs of possible toxæmia were observed. During the subsequent examination I questioned her in reference to fetal movements, and she stated that two days earlier these had stopped.

On examination neither fetal movements nor heart sounds were found; however, as the fetus was in the left occipito-anterior position and a placental souffle was present over the left iliac area, this was noted, although it was considered that the heart sounds could be obscured by a low placental insertion which, in its turn, could be the cause of the ante-partum haemorrhage.

Nine hours later labour commenced, and the child was born at 2 a.m. on August 3. The birth was normal, but the child was stillborn. On the birth of the legs it was seen that the cord was twisted around the lower third of the legs in an extraordinary fashion. There was a loop around each leg in a figure-of-eight manner with the fetal end of the cord looping over the central twist—in other words, the knot was a clove-hitch with one leg in each loop and one end of the loop continuing under and then over the central portion and the other end, to proceed to the umbilicus. The umbilical end of the cord to the "knot" was taut, the legs were flexed on the thighs. The loops were moderately tight around the legs. Some possible movement could have been the final exciting cause of sudden death. No other reason for stillbirth was discovered, and whilst one cannot be absolutely sure of the cause of death, it is thought that one can reasonably assume that this extraordinary knot was the cause.

Reviews.

A HISTORY OF JAPAN.

THE events of the past few years must have called the attention of many people who would not otherwise have given the matter much thought, to that strange eastern race, the Japanese. Some, no doubt, will be content to dismiss them with the epithet "barbarians". Others will wonder what can lie behind the treachery and the savagery of which the Japanese have been guilty, and will cast about for some source of reliable information on the nature of this people. Such inquirers may with safety turn to "A Short History of Japan," by A. L. Sadler, Professor of Oriental Studies in the University of Sydney.¹ This book may be said to present history with a difference; it is full of interesting sidelights that illuminate the actors and the events and add materially to the enjoyment of the reader, and it is adorned with touches of deliciously ironic humour.

Roughly, the history of Japan up to her entry into the recent war may be divided into three periods: (i) from the earliest days until the administration was taken over entirely by Minamoto Yoritomo in 1185; (ii) from that time until the restoration of power to the throne in 1867; (iii) from

1867 until the present day. In the account of the earliest period, the reader is hard put to it to discover where legend ends and history begins. He is introduced to a bewildering array of personages, the deities among whom merge imperceptibly into the early rulers. The names, too, are unusual—"His Augustness Conquering Swift Heavenly Great Ears", "the Impetuous Male Deity", "Prince Ruddy Plenty"—and with pleasure we make the acquaintance of the Empress Jingō. One thing is clear—the Japanese people, if they are steeped in this early mythology, may well accept without question the divinity of the Emperor, for his line goes back without a break to the Sun Goddess. In this first arbitrary division of the history of Japan, the emperors were gradually deprived of administrative powers, which were taken over by the Regents. This naturally led to considerable dissension between rival families, the emperors having but little opportunity to be anything but the proverbial pawn in the game. In 1068 the rule of the Regents came to an end, and a system grew up by which the retired Sovereign administered independently of the Regent, while his son or grandson sat on the throne. Incidentally, the Retired Emperor became a monk, but his court differed only in small details from the Imperial Main Court. In 1155 began the early period of military rule, which was to culminate in the struggle for ascendancy between the Taira and Minamoto clans, from which the Minamoto emerged decisively victorious. Minamoto Yoritomo set about reorganizing the country and giving it some form of orderly government, and he actually laid the foundations of the system that has lasted with some modifications almost to the present day. In 1192 Yoritomo was appointed Sei-i-tai Shogun (barbarian-subduing generalissimo), and this was the first occasion on which the office was bestowed for the administration of the Empire and not for some particular campaign. We now come to the second arbitrary period of Japanese history, during which many interesting characters are brought to our notice. Possibly the three most striking are the Vice-Shogun Oda Nobunaga (1573), the Regent Toyotomi Hideyoshi (1582) and the Shogun Tokugawa Ieyasu, a scion of the Minamoto clan, who established his family in the Shogunate in 1603, where it remained without interruption until 1866, and (having previously made the necessary arrangements) became its tutelary deity after his death. It was when Oda Nobunaga was eight years old that the first Europeans made contact with Japan. They were the Portuguese, and among the benefits they conferred on Japan were matchlocks and gunpowder. The following comment on Oda Nobunaga is illuminating:

His casual eccentricities led his relations and others to underrate his capacity in his youth, but when his father died and he "subdued" his elder brother, and slew his younger, attacked and killed a relative of the main branch of his house and seized the whole province of Owari of which his father had held but a part, it was realized that he had a bright future. That he shut up a lot of Buddhist priests in a temple and had them all shot because they had prophesied that his father would get well showed what he thought of the spiritual profession.

Nobunaga was by no means unique in his ruthlessness in achieving his own ends. The whole of Japanese history is full of characters who, from noble or ignoble motives, did not baulk at treachery or murder if these seemed necessary to them; the matter seemed hardly worth considering, even if the unlucky victim was a son or a father—uncles were much less important. In this second period the feudal lords, who had their own governments and their own armies, and whose ambitions and activities constituted a persistent threat to any central administration, were finally brought to order and kept there. Hideyoshi, who acquired the administrative power as Regent after Nobunaga's untimely death at the age of forty-nine years, had the distinction of being a *parvenu*, the son of a peasant, and of ultimately being deified. In his time the first Japanese Christians went to pay their respects to the Pope. However, Hideyoshi became hostile to Christianity later, from political rather than religious motives—too much propaganda had been taking place—and as a consequence Japan's relationships with foreign countries were more and more restricted. The administration finally established by Tokugawa Ieyasu, which may be briefly described as a benevolent despotism on the part of the Shogun aided by a great many officials, was stable and in the main just. It gave the country a chance to recover from the expensive and exhausting struggles of the feudal lords, although some of the later Shoguns by their extravagance and luxurious living undid much of the good work of Ieyasu and his successor, Hideyoshi.

¹ "A Short History of Japan," by A. L. Sadler; 1946. Sydney, London: Angus and Robertson Limited. 8½" x 5½", pp. 400, with illustrations. Price: 21s.

The Shogunate has been described as a permanent martial law converting the country into one great barracks, with a policy anti-Court, anti-daimyo and anti-foreign. As to the people, they were to be treated with just so much kindness as would ensure the maximum amount of tax and keep them healthy providers of labour and supply.

Towards the end of the Shogunate period the Imperialists, who had for long been working to achieve the restoration of administrative power to the throne, had been influencing the clan statesmen to this effect. Moreover, Britain and America were bringing pressure to bear on the country to open the ports to foreign trade under proper treaties. Within, unity was gone, and Japan was in no position to deal with such a situation. On November 19, 1867, the last Shogun Keki resigned his office, and a little later the feudal lords voluntarily handed over their powers to the throne. In 1881 the Emperor Meiji paid some lip-service to the virtues of democratic government, and in 1885 the old Imperial government was abolished and a new set of State departments under a prime minister was instituted. However, in brief it may be said that from this time on, any extension of power to the people, such as the adoption of the parliamentary system, which has been given with one hand, has been taken away with the other; "dangerous thought" is decidedly frowned upon.

The parliamentary system was no doubt adopted because in the middle of the nineteenth century it was considered to be indispensable to all who would rank with the respectable countries, but it was so modified that it proved not incompatible with the national constitution. Consequently there may be no particular need to alter it. Civilians do not fear or dislike the military, for they have never been used to any other kind of rule; and military rule has proved successful and added to the prestige of the nation, as well as being remarkably free from corruption or class feeling. The soldiers are, on their part, neither uncultivated nor overbearing, and differ only from the rest in being specialists in their profession as are others in science or administration. There are no crack regiments in the Japanese army and exceedingly few titled officers.

In connexion with the Japanese soldier, the following statement is pertinent:

With the expansion of the forces and the passing of time, the older type of officer of the Russo-Japanese war period, who was usually from a samurai family with a background of culture and restraint, had given place to quite a different order drawn from the peasant or small trader class, with the same ignorant fanaticism usually found in the lower middle class of most countries, and deeply indoctrinated in addition by the modern nationalistic education system. These regard themselves as the chosen people, dislike and despise capitalists, diplomats, politicians and foreigners, and seem to favour most a state of socialism in which all the land should "belong to the Emperor", which is merely another way of stating that it should be controlled by themselves. With them the "Bushido" they have always on their lips has become again nothing but the unscrupulous militarism it was in the sixteenth century.

There has been a gradual but uninterrupted development of the idea of Japanese imperialism. By-products of this process have been the Russo-Japanese War, the "China Incident" and the concept of the East Asia Co-Prosperity Sphere. Fascist ideology fitted admirably with the aims of many of Japan's expansionist statesmen; but it is not to be assumed that in the period culminating in the entry of Japan into the war, all those holding power were unscrupulous rogues. Admiral Nomura, who was ambassador to the United States of America at the time of the Pearl Harbour incident, was a personal friend of President Roosevelt, and is said to have had a genuine hope of improving the strained relations between the two countries. However, Professor Sadler considers Japan's treacherous attack on Pearl Harbour quite in character; in another place he remarks that nearly all decisive battles in Japanese history have been won by treachery.

What can be said of the Japanese national characteristics? These have been summed up briefly by Dr. Omori as follows: (i) reverence for ancestors, loyalty and patriotism, (ii) this-worldliness, love of nature and easy going gaiety, (iii) love of cleanliness, respect for the deities and militarism. He and all other critics point out that loyalty to the throne is of a quality peculiar to the country and not seen elsewhere.

Bathing takes the place of repentance and the confession of that sense of sin which Sir George Sansom very truly declares to be quite wanting. And without either sense of sin or fear of death life should indeed be very pleasant. Here the Japanese instinct is in accord with much modern thought.

Shinto is the official religion of Japan, and its observance is attended with great ceremonial; but in the past it has had to contend with Buddhism and Confucianism. However, it is considered unwise to allow deities to get out of control in practical matters, for they can do only unworldly things, which are sometimes "highly inconvenient in a non-ideal world".

Referring to Japan's favourable trade position prior to the recent war, Professor Sadler points out that although wages were low, they were quite in keeping with a life of a reasonable standard of comfort and elegance. The medical reader will naturally wish to know whether the standard of nutrition could be considered reasonable, and whether the vital statistics revealed a reasonable state of affairs.

Australians as a nation are too little interested in other peoples; it would be well if they could cultivate more of that universality of outlook which was extolled by H. G. Wells some years ago. We believe that the publication of this excellent, though compressed, history of a nation which was until recently an enemy, and which has given none of the Allies cause to applaud her, is timely, and may help to remove a number of erroneous ideas, the persistence of which is unfortunate and may even be dangerous. The book is well produced and illustrated by many photographs and drawings. Numerous appendices and a long bibliography are provided.

SULPHONAMIDES.

It is necessary, in view of the frequent synthesis of new preparations, that the therapeutic value of the sulphonamide group of drugs should be frequently reviewed. Practitioners who learn that a new drug has been made available, have little opportunity to test its efficacy in comparison with that of the older preparations. For this reason an up-to-date review of the theory and practice of the use of the sulphonamides is of great value. J. Stewart Lawrence has performed this service for the medical profession in a small volume of 105 pages, published in London in 1946.¹ A complete survey, dealing with the history, the mode of action, the pharmacology and the specific uses of the different drugs is admirably presented. The discussion on the use of sulphonamides or penicillin, though brief, is thoroughly modern, and gives the indications for the choice of drug in different infections. The toxic effects of sulphonamides include crystalluria, agranulocytosis, anaemia, hepatitis, cyanosis, nausea, vomiting, drug fever and drug eruptions. The author states that toxic effects on the nervous system include sometimes very severe headache with head retraction and severe giddiness. He records also the occurrence of rare cases of a more serious nature, such as blindness, aphasia, convulsions and myelitis, which have been attributed to sulphonamides. Peripheral neuritis is said to have been caused not infrequently when methyl sulphathiazole, sulphanilyl sulphanilamide and sulphanil dimethyl sulphanilamide were used, but rarely by those sulphonamides at present in use. Lawrence states that sulphanilamide is unsuitable for systemic use on account of its low potency, that sulphapyridine, owing to its marked toxic effects, has a limited sphere of usefulness and that sulphathiazole is the most potent, but should not be used when the less toxic forms will serve. Sulphadiazine is effective, but the risk of crystalluria is greater and sulphamerazine has much the same potency and the same risk. It is essential in all treatment to maintain a high fluid intake throughout. Sulphamethazine (which has not been available in Australia in any quantity) is, according to Lawrence, the most suitable drug for routine use, being less toxic in every way and just as effective as other preparations except in meningitis. Sulphaguanidine is valuable in bacillary dysentery and succinyl sulphathiazole has similar action. Less known preparations are sulphapyrazine and phthalyl sulphathiazole used for dysentery and "Irgafen", on which clinical reports are few. "Marfanil" or homosulphanilamide has been much used in Germany for local application to wounds, especially against anaerobic organisms.

¹ "The Sulphonamides in Theory and Practice", by J. Stewart Lawrence, M.D. (Edinburgh), M.R.C.P.; 1946. London: H. K. Lewis and Company Limited. 8½" x 5½", pp. 134. Price: 9s. net.

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The Medical Journal of Australia

SATURDAY, JULY 6, 1946.

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THE FEDERAL COUNCIL AND THE FUTURE.

At the last meeting of the Federal Council of the British Medical Association in Australia a long discussion took place on the constitution of the Federal Council and the autonomy of the Branches in Australia. A report of this discussion was published in this journal on April 20, 1946. The subject came up for discussion at the instance of the Queensland Branch, which had instructed its representatives to move that an alteration of the method of representation of the Branches on the Federal Council should be effected. The Queensland Branch went further. It thought that if proportional representation of the Branches on the Federal Council, or something approaching it, was secured, negotiations should be continued with the Central Council of the British Medical Association to obtain complete autonomy of the profession in Australia by vesting in the Federal Council the powers now exercised by the Central Council. The Queensland point of view was presented by Dr. A. E. Lee, who in the end gave notice that at the next meeting of the Federal Council he would move as follows:

1. That steps be taken to modify the composition of the Federal Council so as to secure a representation of Branches more proportional to their numerical strength.

It is recommended that the primary modification of the Council should consist of: New South Wales, four (4) representatives; Victoria, three (3) representatives; South Australia, two (2) representatives; Western Australia, two (2) representatives; Queensland, two (2) representatives; Tasmania, one (1) representative; and that such representation shall be subject to review every five years.

2. That negotiations be resumed with the Council of the British Medical Association to secure autonomy of the profession in Australia by vesting in the Federal Council the control over the Australian profession now exercised by the Central Council; and that the Branches in Australia should be requested to delegate to the Federal Council whatever additional powers are necessary to enable it to exercise a governing function over the profession in Australia.

To say that this matter is of vital importance to the Australian Branches is not an exaggeration. There never was a time in the history of the medical profession of this country when clear thinking, caution and deliberate action were more needed than they are today. The changes that are being planned in regard to medical practice in Great Britain and the declared intentions of our own Federal Government show us that medicine has an opportunity, in the views that it puts forward and the claims that it makes, to be true to its tradition for service and to press only for the betterment of mankind and the progress of medical knowledge. The Australian Branches have to consider the Queensland notice of motion and to come to the next meeting of Federal Council prepared to back their decisions with sound arguments. In all probability the next meeting of the Federal Council will not be held until after the next elections to the Federal Parliament have taken place and the results of the proposed referendum on the Government's powers in the field of social service are made known. By the time the meeting is held the Branches will have had plenty of time to make their decisions.

When we think of the present Federal Council and its disabilities we must recall its predecessor the Federal Committee. This committee was formed in 1911 so that the Australian Branches might have a common meeting ground for the discussion of problems awaiting solution and for the forming of plans on which united action might be taken. In other words, it was a consultative, advisory and coordinating body. At the present stage of our corporate development we may easily overlook the splendid achievements of the Federal Committee—some of us possibly have never heard of them. One of the first things that the Federal Committee did was to set about the work of obtaining powers from the Council of the Parent Body to do those things that were essential to the development of the Australian Branches. Anyone who cares to study some of the leading articles in this journal in 1920 and 1921 and also some of the reports of the meetings of the Federal Committee in those years will realize the enormous difficulties that had to be overcome before any of the Australian Branches could become incorporated so that it would be able to carry out the objects for which the Association had been formed. When the Central Council was approached on the matter it laid down conditions so onerous and unfair that the Federal Committee was compelled to send a special representative to England to argue the question before the Representative Body. The late Robert Henry Todd, whose name will always be honoured while the medical profession has any united existence in this Commonwealth, was so successful an advocate that the Representative Body instructed the Council of the Association to have the Articles and By-Laws drafted in such a way as to enable overseas Branches to retain the character and status, the rights, powers and duties of Branches, although incorporated. If the Federal Committee had done nothing more than this, it would have justified its existence. We may remember, however, that *inter alia* it brought the Australasian Medical Congresses under the aegis of the British Medical Association and thus ensured their continuity and their permanent character. The committee also formed the Australasian Medical Publishing Company, Limited, so that THE MEDICAL JOURNAL OF AUSTRALIA might come into

being. Not long after the Articles and By-Laws had been altered the question of the formation of a Federal Council was raised in this journal, for the formation and incorporation of such bodies had now become possible. It was not until 1933, however, that the Federal Committee became the Federal Council. It was thought and indeed widely believed that the Federal Council would have much wider powers than the Federal Committee had possessed—that it would be able "to initiate new movements or to institute reforms", that it would give a lead to the Branches, and indeed that it would be able to bind them to certain courses of action decided by a majority of its members to be desirable. It remained for discussions during recent years to show that the Federal Council had no power to bind the Branches. Readers will remember that a legal opinion obtained by the Federal Council showed this beyond any doubt—there was, however, a moral duty cast on the Branches to accept the decisions of the Federal Council, even if there was no legal duty.

This brings us to the present time and to the discussion that took place at the last meeting of the Federal Council. The questions of representation and of autonomy of the Australian Branches are inseparably bound together. If the Federal Council is to remain as a coordinating body without added powers there is no real reason why the present method of representation should be changed. In the Federal Council's discussion last March, Dr. F. L. Davies, from Victoria, expressed the opinion that the Australian Branches were free as they stood and that no further powers were needed. Dr. A. J. Collins, from New South Wales, described the present arrangements in regard to representation as archaic. The President described as Gilbertian the need to refer to England for consent questions about which it was known perfectly clearly beforehand that consent would be given. In regard to the statement of the Victorian representative it is possible that the freedom thought to exist is apparent rather than real and that conditions may arise in which a decision has to be made quickly in a matter which must be referred to the Parent Council. Such conditions might not be part of a Gilbertian situation described by the President. In these circumstances it would be wise to secure from the Parent Body the widest possible powers of self-government. There is every reason to believe that the Parent Council will agree to confer on the Australian Branches and their Federal Council the widest powers of self-government. This was clear from the discussions that took place in England in 1938, and indications are not lacking that the same generosity of mind still prevails at Tavistock Square. At the March discussion the President of the Federal Council took care to point out that the securing of complete autonomy by the Australian Branches did not necessarily mean severance of the link with Britain. Complete autonomy in all essential matters will be possible for the Australian Branches while they remain an integral part of the British Medical Association. Reasons of sentiment have been advanced in opposition to any suggestion of "cutting the painter" and of securing affiliation through an Australian association. While sentiment alone must not govern the making of a decision, we shall all agree that sentiment has a powerful influence with every member of the profession. Though possibly a good case may be made for cutting the painter, there

are many disadvantages, and apart from every other reason caution should make us realize that once the painter is cut it will not be possible to join it again. If then the Branches decide to ask the Federal Council to seek wider powers of self-government, they will have to determine what steps they will take about representation. Though the numbers suggested in the Queensland notice of motion are not really proportional, they do take a step towards proportional representation. In this matter *amour propre* must not be allowed to dictate to common sense. Representation on a strictly proportional basis might easily be unfair to Branches which, though small in membership, serve large areas of the continent. There is also something to be said for the view expressed at the March meeting of the Federal Council that no Branch should have less than two representatives, because with only one representative a Branch would sooner or later reach a point at which its representative was quite unfamiliar with Federal Council activities. If the suggested figures were accepted, it might be well to accept them as something in the nature of an experiment. In these circumstances certain legal requirements would have to be met and the consent of the Parent Body would have to be obtained, but these things could be done without much difficulty.

Current Comment.

PHARYNGITIS AND INFLUENZA.

THE sore throat in epidemics of respiratory disease may seem a trite subject. Actually the frequent mutations in clinical symptoms confer some freshness of aspect on each outbreak as it appears. Readers will remember the severe epidemics of the early war years, concerning which a number of valuable articles were published in these pages. These epidemics affected military camps and spread to some degree through the civilian population also, and it was noted that the physical signs were not in all respects those seen in previous outbreaks. The researches carried out on influenza of recent years have enabled isolation of the aetiological agents to be carried out with greater ease. This is important, for the modern therapeutic weapons such as the sulphonamides and penicillin need an accurate knowledge of the nature of an epidemic if they are to be used scientifically. J. M. Adams, M. M. Pennoyer and A. M. Whiting have recently made a study of the acutely inflamed pharynx in influenza.¹ All who have suffered from influenza or the similar acute infections of the upper respiratory tract know from experience the early and acute discomfort arising from the inflamed pharynx. Inspection also shows an engorged throat, and further investigation is usually confined to incubation of the secretions of the nose and throat obtained by swabbing. These authors, however, have made direct observations on the smears, particularly with regard to their cellular content. They worked on material obtained from the throats of young adults and children affected by an epidemic process proved to be due to the influenza virus A. Dry swabs were used to collect the exudate from the lateral and posterior walls, smears were made on slides treated with a fixative and examined at once after being stained with haematoxylin and eosin. Over 300 specimens were examined in the course of this study. Microscopic inspection made under a low-power lens showed a large number of sloughing epithelial cells, in contrast with the usual collection of pus cells seen in most cases of pharyngitis. Large sheets of epithelial cells were frequently seen. Previous workers commented on the finding

¹ American Journal of Diseases of Children, February, 1946.

of infiltrations of mononuclear cells in the pulmonary alveolar walls of animals infected with the influenza virus and similar viruses, and Rivers is quoted as stating that the inflammatory process is usually characterized by mononuclear cells if secondary infections have not supervened. Adams, Pennoyer and Whiting next studied smears from patients in whom definite immune response was demonstrated in the serum. In only one out of 35 of these was an intense polymorphonuclear response noted, and this patient had pneumonia later. No mononuclear reaction was found in swabbings taken from normal persons. An almost entirely polymorphonuclear exudate was found in 18% of all the specimens examined, and in many of these patients from whom the specimens were obtained a subsequent complication was observed such as sinusitis, tonsillitis or pneumonia. A series of patients who exhibited definite bacterial complications was observed, and the great majority of these had a predominant polymorphonuclear response on the pharyngeal wall at an early stage. More recent studies by the authors indicate that a mononuclear response is common in many patients with a virus pneumonia. They conclude that in the epidemic studied by them increased destruction of the pharyngeal epithelial tissue was a definite feature which could be correlated with the frequency of pharyngitis as a clinical symptom. They suggest that a study of pharyngeal smears is a helpful method of diagnosis in upper respiratory infections, and one which may indicate whether the infective agent is viral or bacterial, or whether bacterial symptoms are likely to be expected in an infection epidemiologically of viral origin.

It is not out of place to refer finally to recent work done on the association of streptococcal infections with epidemics of true influenza by L. A. Rantz, H. H. Rantz, P. J. Boisvert and W. W. Spink.² In a study of throat infections due to the hemolytic streptococcus in a military post they found that even well-seasoned troops might be affected by virus A influenza, but that such infections did not *per se* enhance the spread of streptococci. Both streptococcal and non-streptococcal respiratory infections were more likely to be associated with a move of troops from one area to another. It would seem that prolonged residence in one post conferred a considerable resistance to streptococcal infections. The problems of prophylaxis are difficult, but future work on the subject will be watched with interest.

THE TREATMENT OF NEUROSES.

PERHAPS the general practitioner of experience, who has been treating patients with neuroses all his professional life, is a little tired of reading about them. Perhaps, too, he feels out of touch with the intrinsic terminology of the various schools of psychiatry. But it is helpful to read the avowal of a psychiatrist that the members of his specialty, even in the United States of America, are numerically at least incapable of handling the neurotic disabilities of the community. Thomas A. C. Rennie, in writing of the role of the general practitioner in psychiatric medicine, points out that medical boards in America revealed one and a half million young people unfit for military service for reasons connected with the integration of their nervous systems and personalities with life.³ In addition there are half a million discharged personnel with similar disabilities and a quarter of a million whose physical maladies are complicated by a neurosis. A total of 3,500 psychiatrists is impressive, but it looks smaller when compared with the total number of doctors, 185,000. Of course, it is fantastic to suggest that it is necessary or even desirable for all these people to be treated by specialists in psychiatric medicine, and Rennie makes no such claim. We have always known, he states, that 40% to 60% of people consulting doctors need special mental understanding. He further remarks that the psychiatrist

has been too long isolated from the stream of general medicine, and has tended to wrap up his ideas in a formidable language of his own. The general practitioner, on the other hand, has tended to remain remote from a subject that really concerns him a great deal, and has complained that he cannot afford the time that is required by this work. Perhaps Rennie has stated one point with unusual clearness when he observes that the practitioner feels that the techniques are intangible and non-scientific, though the examples he gives of scientific techniques are not representative of those that can be adopted by the ordinary doctor. Shock therapy, insulin coma, hypnosis and narcosis techniques are only for the practitioner with special experience. Yet there is no doubt that the compression into the undergraduate medical course, mentally underlining the word "undergraduate", of such a multitude of highly technical methods has undoubtedly shifted the centre of gravity of medical education till it has become a tottering structure, whose restoration to safety is now the concern of every medical school in the world.

Rennie's article is full of aphorisms, some of which are worth quoting, not so much for their novelty as their terseness. "There is no such thing as differentiating between organic and functional, it is always both." The doctor "must learn to observe and evaluate his own reactions toward the patient . . . if his attitude is primarily disdain toward neurotic patients, he should not try to treat them". Further, he must appreciate the endless mixtures of mental and somatic reactions, the mechanisms underlying the proneness of some persons to accident, the addiction of others to repeated surgical procedures, none of which give relief, the patients who live in perpetual gloom, and those who are a prey to constant fatigue for no apparent reason. It is quite obvious that all such problems concern all doctors.

The author emphasizes that understanding of and sympathy with people are all essential, and that in attempting their adjustment the doctor's main weapon will be conversation, and his armour a refusal to be disarmed by resentment or even hostility. The article traverses the steps in an interview. In truth they are not really different from the ordinary full routine of history taking, but it must be admitted that for the elucidation of any real medical problem sufficient time and interest should be available for both parties. Finally Rennie suggests a course of reading and recommends a number of standard books suitable not for the specialist in psychiatry, but the general practitioner. All this reminds us that the medical profession faces critical times. Never has a spurious speed so governed our actions; never has a mechanized outlook so conditioned our lives. More and more help will be asked of us by the community, and however our conditions of work may change, we must prove by our work that our interest is in man and not only in his many inventions.

THE USE OF CURARE IN DYSMENORRHCEA.

As a corollary to the important paper on curare in anaesthesia by H. J. Daly and S. V. Marshall in this issue, attention may be drawn to a report by Florence Johnston, who has used this drug in the treatment of dysmenorrhœa.⁴ The series collected by her include 49 women in 73 menstrual periods. In half the cases results were good, relief being immediate; in one-third there was no relief; in the remainder partial relief was obtained. The disabilities relieved comprised cramps, nausea, backache, dizziness and a feeling of tension. The dose given was 50 to 100 milligrammes of curare. Sometimes a second dose of 50 milligrammes had to be added. The drug has to be given parenterally, which may be a disadvantage. The presence of *myasthenia gravis* is a contraindication to its use. Johnston's paper should be carefully studied. She thinks that the drug may act by improving the circulation of the uterine muscles by its relaxing action on all muscles.

¹ Archives of Internal Medicine, February, 1946.

² Bulletin of the New York Academy of Medicine, January, 1946.

³ American Journal of Obstetrics and Gynecology, April, 1946.

Abstracts from Medical Literature.

MEDICINE.

Investigations in Hepatitis.

JOHN R. NEFFE, JOSEPH STOKES, JUNIOR, AND JOHN J. REINHOLD (*The American Journal of the Medical Sciences*, July, 1945) report the result of the oral administration to volunteers of faeces from patients with homologous serum hepatitis and infectious (epidemic) hepatitis. Pooled specimens of faeces from six subjects during various stages of homologous serum hepatitis were administered orally to nineteen healthy volunteers, and none of these subjects showed evidence of hepatitis during a four to six month period of observation, suggesting that the causative agent either was not present in the faeces or was not active when administered by the gastro-intestinal route. Pooled specimens of faeces from patients with infectious (epidemic) hepatitis were administered orally to healthy volunteers, and hepatitis occurred within 26 days in six of twelve subjects, confirming the observation of others that the causative agent is present in the faeces of patients with the active disease. Pooled specimens of faeces obtained from two volunteers during the preicteric and icteric stages of experimentally produced infectious (epidemic) hepatitis were administered orally to seven healthy volunteers, and one developed the disease after 26 days, indicating that the agent was present in faeces obtained during the active disease. Pooled specimens of faeces from the same two volunteers three weeks after the disappearance of jaundice also were administered orally to seven healthy volunteers and none developed hepatitis during a four month period of observation, suggesting that the agent was not present in the faeces three weeks after the disappearance of icterus.

Infective Hepatitis.

J. BASIL RENNIE, with the technical assistance of T. J. Pirie (*The American Journal of the Medical Sciences*, July, 1945) discusses infective hepatitis with special reference to prognosis. There is a growing amount of evidence that the liver may sustain permanent, but not immediately fatal, damage from an attack of acute infective hepatitis. The clinical manifestations shown by 39 patients in the acute stage of infective hepatitis are summarized, and six cases of subacute hepatitis and cirrhosis considered to be sequels to acute infective hepatitis are discussed in detail. Liver efficiency tests were performed on all patients under observation. Hippuric acid synthesis and levulose tolerance and the estimation of plasma albumin, globulin and bilirubin were used as tests for liver damage. None of the series of patients died and all left hospital well or with slight jaundice only. Hippuric acid synthesis and levulose tolerance were impaired and the plasma albumin content was invariably reduced when the plasma bilirubin was greater than 10 milligrammes per 100 millilitres. Tests repeated at the time of dismissal showed that one or more functions were still abnormal in a large proportion of 23

patients. Six out of fifteen patients reexamined four weeks to 29 months after dismissal still gave an abnormal response to one or more hepatic function tests, although all felt well and showed no clinical evidence of hepatic disease. The plasma bilirubin content was within normal limits in all cases. Autopsy or biopsy was made in four of the six cases of hepatic disease believed to be a sequel to acute infective hepatitis, and this confirmed the existence of subacute hepatitis or cirrhosis.

Thiouracil in Graves's Disease.

DAVID P. BARR AND EPHRAIM SHORR (*Annals of Internal Medicine*, November, 1945) report the results of their observations on the treatment of Graves's disease with thiouracil. In a series of 100 cases remission was induced in 87. The drug produced a beneficial influence on emaciation, tremor, hyperkinesia, circulatory symptoms, basal metabolic rate, cholesterol levels, creatine defect, and on the tendency of thyrotoxic patients to lose nitrogen, calcium and phosphorus. Estimations of the blood cholesterol level and the extent of creatine defect were found to be valuable aids in following the effects of the drug. Protrusion of the eyeballs was not lessened, but lid spasms and lid lag were improved or controlled. Benefit from the drug was often apparent in less than ten days and normal conditions were usually attained within forty days. The previous use of iodine and the presence of a large nodular goitre were factors tending to retard the rate of response. Of the 100 patients, 73 were successfully treated in the sense that they were maintained in remission, and in the case of 37 of the 73 the drug was withdrawn for two to sixteen and a half months without relapse. The drug failed to excite favourable response in two instances, permitted relapse during treatment in four cases, and exerted unsatisfactory control in two of the series. There were three deaths from circulatory complications, but none that could be justly ascribed to the action of the drug. Unfavourable symptoms resulted in the withdrawal of the drug in twelve of the cases, and there seemed little doubt that in five of these the untoward symptoms were caused by the drug. Two cases of agranulocytosis were encountered, one being mild and transient and the other being severe and prolonged, but followed by recovery after seven days under the protective use of penicillin. Upon the basis of this study, the authors express the opinion that thiouracil is deserving of more extended and more general trial, and that the evaluation of its role as an alternative to surgical treatment awaits further clinical experience.

Penicillin in the Treatment of Meningitis.

W. L. WHITE, F. D. MURPHY, J. S. LOCKWOOD AND H. F. FLIPPIN (*The American Journal of the Medical Sciences*, July, 1945) have studied the effect of penicillin in 71 cases of acute pneumococcal, meningococcal, streptococcal and staphylococcal meningitis, and present their conclusions in terms of gross mortality figures and of clinical response in patients seen at various stages of the disease. Certain observations were made with regard to dosage schedules, routes of adminis-

tration and the concomitant use of sulphonamides. They offer the following as a safe and useful plan of therapy. (i) Prompt diagnosis with ample supportive therapy. (ii) Penicillin, 200,000 units, administered systemically each day continuously by the intravenous route during the acute phase of the disease and later intermittently by the intramuscular route as the infection is brought under control. (iii) Penicillin, 10,000 to 20,000 units, given intracisternally once or twice a day. (iv) Ample sulphadiazine or sulphamerazine systemic therapy to attain a blood concentration of over fifteen milligrammes *per centum* of free drug in conjunction with the administration of penicillin. (v) Continuance of intracisternal administration of penicillin until four days after the spinal fluid has cleared and nuchal rigidity has begun to decrease and continuance of systemic penicillin therapy until seven to ten days after the disappearance of all signs of infection. The authors found that penicillin was often effective in pneumococcal, meningococcal and streptococcal meningitis after adequate sulphonamide therapy had failed to produce the desired response. The presence of subcranial foci and advanced age were cardinal factors influencing the mortality rate in pneumococcal meningitis. Intrathecal penicillin therapy does not appear harmful and intracisternal injection seems to be the most effective route of intrathecal administration. Although penicillin administered by the systemic route alone may have a curative effect in selective cases, it seems preferable to supplement systemic administration with intrathecal injections of the drug by the cisternal route. The superiority of penicillin therapy over other forms of chemotherapy is most clearly demonstrated in staphylococcal meningitis. The authors conclude that it is not unlikely that the best results will be obtained through the use of a combination of penicillin and sulphonamides in systemic therapy and penicillin given intrathecally.

Chronic Paranasal Sinusitis Treated Locally with Penicillin.

G. E. TREMBLE AND F. SMITH (*The Canadian Medical Association Journal*, December, 1945) have treated subacute or chronic paranasal sinusitis with great success by instilling a solution of penicillin, containing 10,000 units per millilitre, into the sinuses by a method which displaced the air in them. The method was adopted because when nasal medication is accomplished by means of a dropper with the head in the dependent position the medicament runs away into the naso-pharynx within a few minutes and the effect is soon lost. Liquid instilled into the sinuses by displacing the air was found to remain there for from one to three days. The patient's nasal mucous membrane was first shrunk by spraying with a 5% to 8% solution of cocaine hydrochloride, and he was placed on a table with his head hyperextended over the edge. He was then asked to roll slightly on his side with the nose turned upward so that fluid could not run out. Then three millilitres of the penicillin solution were instilled into the lower nostril. Intermittent negative pressure from a rotary pump was applied to the lower nostril through an olive tip while a finger closed the

upper nostril. The patient was instructed to repeat the letter K in order to close the pharynx. After applying alternate suction ten or twelve times to displace the air and get the solution into the sinuses another millilitre or two were instilled and the suction was repeated. The head was then turned to the other side and the other nostril was treated in the same way. The whole procedure required only a minute or two. On returning to the upright position the patient noticed little taste, the solution being in the sinuses. He was cautioned against blowing his nose for an hour or two. Notwithstanding that the nose was well cocainized, the patient complained of a burning discomfort in the nose and eyes which lasted for an hour or so after each treatment; this was overcome by incorporating 1% of tetracaine hydrochloride in the saline solvent of the penicillin.

The Effects of Thiouracil on the Thyroid Gland.

JOHN WESLEY SHIRER AND MORTIMER COHEN (*Annals of Internal Medicine*, November, 1945) discuss the effects of thiouracil on the thyroid gland. The drug was used in a series of cases, not as a substitute for operation, but in the preparation of patients for operation as iodine is used; therefore, the thiouracil was administered over a relatively short period of time. The authors elected to illustrate the effects of thiouracil on the histology of the thyroid gland as found on examination post-operatively. The gland removed after preparation with thiouracil is red, moist and friable and offers greater technical difficulties to the surgeon than the iodine prepared gland. In some individuals, thiouracil is toxic. Some patients who are very ill may have a stormy post-operative course. Iodine is stated, therefore, to seem to be the drug of choice, so far, in the preparation of thyrotoxic patients for operation. The histology of the thiouracil-treated gland showed marked hyperplasia with tall pale cells and large nuclei toward the centre of the cell. Colloid was practically absent. The picture resembled the histology of the toxic goitre before the days of iodine preparation. Iodine administered either before or after thiouracil seemed to mask the picture of hyperplasia seen when thiouracil was used alone.

Traumatic Wet Lung.

T. H. BURFORD AND B. BURBANK (*The Journal of Thoracic Surgery*, December, 1945) declare that in all wounds of the chest, to a greater or less degree depending on the type and severity of the injury, the lung tissue reacts to produce more than the normal amount of interstitial and intraalveolar fluid; also that in all wounds of the chest the broncho-pulmonary tree not only contains more fluid, but becomes less capable of ridding itself of fluid. The result of these two phenomena is what the authors, for want of a better term, call the wet lung of trauma. The traumatic wet lung, in the well-developed early case, causes the patient to be apprehensive as a rule; dyspnoea of some degree is always present and is accompanied by paroxysms of a painful cough, which is unmistakably moist, even after the patient has expectorated a little; because of the

pain respirations are often grunting. On physical examination there is restriction of motion of the affected side and the breath sounds are weakened; there are various accompaniments. The authors have found that patients suffering from traumatic wet lung were dramatically relieved by injecting the intercostal nerves with local anaesthetic solution. The relief of pain caused cough to become painless and effective, and the patients often passed from an alarming state to one of comparative comfort in a few minutes. Where the broncho-pulmonary moisture was very excessive, tracheobronchial catheter aspiration was also practised, and when necessary oxygen was administered under pressure.

Simultaneous Familial Haemolytic Crises.

J. L. HORNE *et alii* (*The Lancet*, July 14, 1945) report the occurrence of severe haemolytic crises, which developed within a few days in a mother, four of her six children and a cousin, all members of a family subject to congenital achlorhydric jaundice. No explanation could be found for the simultaneous occurrence of the crises. The authors mention several similar reports in the literature.

"Lung Lavage" to Demonstrate the Elimination of Tubercl bacilli.

M. DE ABREU (*Diseases of the Chest*, November-December, 1945) describes a new method, which he calls lung lavage or tracheo-bronchoalveolar lavage, which he claims to solve the problem of demonstrating the elimination of tubercle bacilli. First the supraglottic region is anaesthetized with one to two millilitres of a surface anaesthetic solution, applied slowly with a small syringe; next the tongue is held forward and infraglottic anaesthesia is produced by inhalation of one to two millilitres of the same solution. Then ten to twenty millilitres of physiological saline solution are injected, with the tongue again held forward, the patient inhaling. Finally the patient is made to cough and the sputum is collected for examination. A trial of the method has appeared to indicate that it is more successful in demonstrating tubercle bacilli than the examination of stomach washings.

Petit Mal.

W. G. LENNOX (*The Journal of the American Medical Association*, December 15, 1945) discusses *petit mal* epilepsies, their electroencephalograms and their treatment. The electro-encephalograms were of the two per second spike and wave pattern or the three per second dart and dome formation. The age of the patients with *petit mal* among 1,260 epileptics was always under twenty years. Three types of *petit mal* seizures were recognized—a transient lapse of consciousness, a single quick contraction of muscles and a sudden loss of postural control. The *petit mal* seizures were always sudden in onset and termination, of brief duration and very frequent occurrence. Pyknoepilepsy, *petit mal* or dart and dome dysrhythmia, as the author calls these seizures, consists of a lapse of consciousness lasting from five to thirty seconds. If there is any rigidity of muscles or purposeless automatic action, groaning, mumbling or chewing action, the attack is a

psychomotor seizure and not *petit mal*. *Petit mal* usually occurs several times every day. It does not affect mentality; in fact the mentality is usually superior. Myoclonic epilepsy occurs in subjects of *grand mal* or *petit mal* as a rule. It consists of single contractions of flexor muscles, usually of one or both arms, similar to sleep start. Akinetic epilepsy consists of a sudden loss of postural control with nodding of the head, or a sudden fall. The child may get up immediately or lie limp and unconscious for several minutes. The author states that the treatment of *petit mal* has been notoriously ineffective, but that it tends to spontaneous cure. He mentions several drugs which he states have been ineffective and praises a new drug, not yet available generally. Tridione, 3, 5, 5-trimethoxyazolidine-2, 4-dione, in capsules of 0.32 grammes (five grains), in doses of 15 to 30 grains a day, was given to thirty patients with *petit mal*. The results were dramatic; in days or weeks the seizures ceased in 28% of cases, were reduced to less than one-fourth of their usual number in 52%, and were little affected in 20%. Unpleasant effects were skin rashes and photophobia. Tridione was useless in *grand mal*.

Post-Pneumonic Thoracic Empyema.

ALLEN I. JOSEY, JOHN W. TRENIS AND WALTER F. KAMMER (*Annals of Internal Medicine*, November, 1945) report the result of treatment of fourteen patients suffering from post-pneumonic thoracic empyema with sulphonamides, penicillin and repeated thoracentesis. No complications were present. When the thoracentesis was performed early in the course of the empyema and was frequently repeated, the pleural exudate was rapidly sterilized, became less purulent and more serous in character, and could be completely evacuated. The authors are of the opinion that this method should always be used in post-pneumonic empyema and that the previously accepted procedure in which the pleural exudate is allowed to become thickened and a thoracostomy is performed should be applied only when thoracentesis cannot be safely used because of the location of the exudate or when the infecting organism is resistant to sulphonamides and penicillin.

Filariasis.

K. J. THOMPSON, H. RIFKIN AND M. ZARROW (*The Journal of the American Medical Association*, December 15, 1945) discuss early filariasis in young soldiers. Several types of disease were observed—an acute lymphangitis involving one or more upper or lower extremities, acute epididymitis, general lymph gland enlargement, or intermittent swelling of the extremities. Persistent enlargement of lymph glands is the common finding in all types. Two hundred patients were studied. Biopsies were performed on axillary lymph glands or thickened lymph channels, usually with characteristic morphological findings of hyperplasia, eosinophilia and oedema. The blood count revealed eosinophilia in 34% of patients, rising as high as 28% of the leucocytes in one patient, and averaging 10% to 15%. Microfilaria were not demonstrated in the blood. A skin test using *Dirofilaria immitis* as an antigen gave positive results in 73% of cases with a titre of 1 in 4,000 or higher.

British Medical Association News.

NOTICE.

THE General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioners have been released from full-time duty with His Majesty's Forces and have resumed, or will resume, civil practice as from the dates mentioned:

- Dr. Herschel Beattie, 199, Marius Street, Tamworth, New South Wales (March 9, 1946).
- Dr. G. Blaxland, 4, Chertsey Street, Merrylands, New South Wales (May 17, 1946).
- Dr. W. H. Cook, 26, Cloete Street, Young, New South Wales (July 1, 1946).
- Dr. Alban Gee, "Craignish", 185, Macquarie Street, Sydney (May 1, 1946).
- Dr. F. B. Burnett, Chinchilla, Queensland (July 1, 1946).
- Dr. D. C. Howle, Peel Street, Tamworth, New South Wales (July 1, 1946).
- Dr. K. T. Hughes, 135, Macquarie Street, Sydney (July 8, 1946).

Medical Societies.

MELBOURNE PÄEDIATRIC SOCIETY.

A MEETING of the Melbourne Pädiatric Society was held at the Children's Hospital, Carlton, Melbourne, on May 8, 1946, DR. A. P. DERHAM, the newly elected President, in the chair. Parts of this report appeared in the issues of June 22 and June 29, 1946.

Patent Ductus Arteriosus.

DR. LESLIE WATT presented a male child, aged five years, suffering from patent *ductus arteriosus*. He was born two months prematurely and weighed at birth only three pounds five ounces. He had never been cyanosed and did not experience dyspnoea on exertion. Last year he had weathered successfully whooping cough and measles complicated by bronchopneumonia. This year he had some carious teeth removed under general anaesthesia. On examination, he was stunted in growth. Auscultation revealed a "machinery" murmur with an associated thrill at the left upper border. The apex beat was situated in the fifth left intercostal space three and a half inches from the mid-line. The blood pressure was 110 millimetres of mercury, systolic, and 60 millimetres, diastolic. X-ray examination of the chest revealed enlargement of the heart, chiefly of the ventricles, widening of the conus shadow and congestion of both hilar regions.

DR. WATT said that he was anxious to hear some discussion on the surgical treatment of these patients. This child was healthy and suffered no disability apart from some retardation of growth. It had been pointed out that the condition might be associated with other anomalies, for example, coarctation of the aorta or aortic stenosis, and it might play the part of a compensatory mechanism. Surgery could be considered only when occlusion of the ductus would not adversely affect the circulation.

Maude Abbot had stated that infection occurred in 37.5% of uncomplicated cases in which the patients survived the fifth year. Surgery in these cases gave dramatic relief, and when combined with penicillin therapy might effect a cure. Heart failure was also an indication for surgery. Children were good subjects for intrathoracic operations and the ductus was more readily approached and dealt with than in later life. In general, operation should be performed about the age of nine or ten years, provided there was no evidence over the preceding years that the ductus was closing spontaneously. In the absence of infection, the operative mortality was 9% or less. Closure of the ductus resulted in a decrease in the size of the heart, the pulmonary artery shrinking in size and the pulse pressure returning to normal.

Harrington and Barnes had stated that the indications for surgical closure of the ductus were: (a) stunted growth; (b) uncompensated ductus with an enlarging heart or symptoms of increasing dyspnoea or both; (c) the presence of bacterial endocarditis. The operative risks were exsanguinating haemorrhage, massive pulmonary collapse, septic mediastinitis, hemothorax and temporary laryngeal or phrenic paralysis.

Gilchrist, of Edinburgh, had subjected fourteen of twenty-eight patients to operation. He noticed distinct improvement in general health and physical capacity in six instances. Less benefit than anticipated occurred in four cases because complete obliteration was not obtained. Two patients died after the operation. Two operated on for complicating bacterial endocarditis also died.

DR. WAIT concluded by saying that the good results obtained with penicillin therapy in bacterial endocarditis might strengthen the policy of those who adopted a conservative attitude.

DR. GUY SPRINGTHORPE said that these cases aroused interest because of the successful results published in the American literature. DR. WAIT's case appeared to be uncomplicated by other lesions, and so surgery appeared to be indicated. Gross had described successful results with a reasonably low mortality in thirty-six cases. Patent *ductus arteriosus* led to interference with growth during childhood, and in later life there was a real danger of bacterial endocarditis. Few patients survived to be healthy adults. Concerning the operation, DR. Springthorpe said that he was struck by the necessity for expert and adequate anaesthesia. In this case he would advise operation quite soon, as five to six years was considered to be the most suitable age.

DR. ROBERT SOUTHBY pointed out that the first child subjected to surgery in Melbourne was shown at a meeting of the Royal Australasian College of Physicians. The result was said to be perfect. However, the murmur had returned.

DR. ALAN PENNINGTON said that he knew of two cases in which the murmur disappeared after operation only to recur three years later. Cellophane was used external to the ductus to promote *endarteritis obliterans*. The rationale of this was not clear, and DR. Hayward had not tried it in his cases.

DR. H. DOUGLAS STEPHENS said that he had seen the operation mentioned by DR. Southby. The ductus had been doubly ligatured. DR. J. Brown had said that the operation was relatively simple, but that controlled anaesthesia was essential. DR. Stephens said that he still did not know whether tying the artery was going to enable these patients to live longer.

Duodenal Diverticulum.

DR. JOHN BEGG showed a female child, aged eight years, who first attended the out-patient department at the age of three months. She then presented a feeding problem, and owing to the frequency of her vomiting was suspected of having congenital pyloric stenosis. This diagnosis was not substantiated, but she continued to have attacks of colicky abdominal pain and vomiting, associated at times with fever and occasionally with convulsions. As time went on the attacks became more frequent, occurring every few weeks, and it was noticed that melena was present also with the attacks. A limp had been noticed when the child first walked. Spasticity was detected in the right lower limb, which was smaller and shorter than its mate. This condition was diagnosed as a spastic monoplegia.

At the age of eight she was seen in the out-patient department still complaining of increasing attacks of colicky abdominal pain. No obvious cause for the attacks could be discovered, and apart from the spastic right leg, no physical abnormality was apparent on ordinary examination. A barium meal examination was made, and the radiologist reported that there was a diverticulum of the upper part of the jejunum, probably in the region of the duodeno-jejunal flexure. DR. Begg said that this could be seen beautifully demonstrated in the films. The barium-filled diverticulum could be seen after the remainder of the meal had passed on. Considerable discussion arose as to whether this undoubted diverticulum was the cause of the attacks of pain, vomiting and fever, and finally it was decided that the abdomen should be explored. Through an upper left rectus incision the abdomen was opened and the region of the duodeno-jejunal flexure was examined. It appeared completely normal. There was a tiny diverticulum in the lower curvature of the stomach. The whole length of the small bowel was then examined, but no diverticulum was discovered. The appendix was long, free, of normal calibre, and contained two very small faecaliths. In view of the very definite X-ray findings it was felt a diverticulum was undoubtedly present, and should if possible be exposed. On strong retraction of the first jejunal loop to the right, a small bulge was noticed under the peritoneal reflection from the fourth part of the duodenum. With a little blunt dissection over this, the diverticulum came into view and was finally delivered, the peritoneal and muscular coats were incised, the mucous membrane was ligated and divided and the stump was oversewn. The diverticulum was about an

inch long. There was no evidence of recent or past inflammation, and the mucous membrane did not appear to be ulcerated. Subsequent microscopic examination revealed normal looking duodenal mucosa with no evidence of the presence of the gastric mucosa sometimes found in these lesions. The appendix was removed and the abdomen was closed in layers without drainage. Convalescence was uninterrupted, and since the operation some nine months previously there had been no attacks of pain or melena. Dr. Begg said that it was felt at the time extremely doubtful whether such an innocent looking lesion could possibly be the cause of such severe symptoms, and he was still not wholly convinced that it was, even in the light of such a gratifying result as freedom of attacks for nine months. The case at least illustrated the importance of fully investigating radiologically the intestinal tracts of all children—and their number was large—who persistently complained of recurring abdominal pain.

Ollier's Disease.

Dr. Begg's next patient was a male child who was brought to the surgical out-patient department at the age of fourteen months because the mother had noticed that the right leg was shorter than the left and that some deformity of the hands was present. He was the first child of healthy Australian parents, and was delivered normally at full term after a normal labour. Examination revealed a healthy looking child, with some shortening of his right lower limb and some stunting of his fingers. There was no limitation of any joint movement and muscle power appeared normal. No abnormality was detected in his heart, lungs, abdomen or nervous system, and mental development appeared to be normal for a child of his age. There was no facial asymmetry. X-ray examination of his skeleton, on which the diagnosis of the condition was made, revealed the characteristic changes first described by Ollier in 1899, which bore either his name or that of dyschondroplasia. It could be seen from the radiographs that the condition was bilateral in both upper femoral and humeral and both lower radial metaphyses and existed also in both the upper and lower tibial metaphyses on the right side as well as in all the phalanges and metacarpals and both iliac bones in the pelvis. The normal growth of the lower fibular epiphysis was producing a *varus* deformity of the foot and causing the deformity which attracted the mother's attention. In detail the metaphyses were seen to be broadened with poor bony texture, while here and there the trabeculae appeared to be laid down in longitudinal parallel lines, giving a characteristic striped appearance to the region. Between these lines were large areas of radiotranslucency. Biopsy of these areas, in cases investigated by this method, had shown that they consisted of cartilage. On the surface of the metaphysis an occasional small spiky exostosis appeared to be developing. These were irregular, had no particular direction, and frequently had a core of radiotranslucent cartilage, quite different from the club-shaped, well-defined, obliquely directed exostosis with its core of finely trabeculated bone, associated with metaphyseal deformity, in the condition known as multiple exostosis or metaphyseal aclasis. The epiphyses showed changes as well as the metaphyses. The epiphyses were said to be invariably normal at birth and did not usually show changes until several years had elapsed. Slight changes could, however, be seen in the films taken of this child at the age of fourteen months, and these were well marked in those taken at twenty-two months. It was interesting to note, as described by other observers, that when the whole width of the metaphysis was not involved, a normal portion of the epiphysis lay opposite a normal portion of the metaphysis, and opposite a diseased portion of the metaphysis the epiphysis also showed radiological changes. These changes were not the same striping of the trabeculae, with cyst-like translucent areas of the metaphysis, but an irregular speckling due to irregular calcareous deposits in the affected epiphysis. The correspondence of the affected portion of the metaphysis with that of the epiphysis was well marked in the right lower femoral region. Multiple enchondromata were frequently seen in the shorter long bones in this condition; indeed most observers were of the opinion that all cases of multiple enchondromata, even if unassociated with metaphyseal lesions, were really cases of Ollier's disease. This child, though showing extensive changes in the bones of both hands, did not show anything that could be described as an enchondroma, the lesions being confined to the metaphyseal regions of the phalanges and metacarpals, analogous in miniature to those of the affected long bones. Dr. Begg said that it would be noted that the maximal changes had occurred in the regions of most rapid bone growth, namely,

the epiphyses and metaphyses of the knee, shoulder and wrist regions. The clinical features of the disease were the development of a deformity in the first few years of life in an otherwise healthy infant. This might be either unilateral or bilateral, as in the case shown. In the unilateral cases facial asymmetry had been reported. Weight leaning tended to produce an increase in the deformity. The diagnosis was made on the X-ray findings, and it was necessary to stress the importance of complete X-ray examination of the skeleton in all cases in which chondromata or cyst-like spaces in the bones were detected, if cases of dyschondroplasia were not to be overlooked. The chief differential diagnosis was from hereditary metaphyseal aclasis, or multiple exostosis, a condition with which dyschondroplasia was frequently confused. Though some observers had regarded both conditions as variations of a single theme, there was no doubt that distinct points of difference could, in the vast majority of cases, be determined. In metaphyseal aclasis the essential feature of the pathology was probably a failure of development of the sheath of subperiosteal bone in the metaphyseal regions, and not a failure of ossification of cartilage as in dyschondroplasia. The lack of this subperiosteal ferrule of bone led to a lack of modelling of the metaphysis, giving it a characteristic trumpet shape, the epiphyseal cartilage projecting as a cap over the sides as well as the ends of the epiphysis. Characteristic club-shaped multiple exostoses, directed by bone growth away from the epiphysis, developed from this cap of cartilage, and were covered by it. There was a strong hereditary tendency to be seen in dyschondroplasia. *Osteitis fibrosa cystica* was distinguished by the fact that lesions in that disease were not confined to the epiphyseal and metaphyseal regions, and lacked the characteristic striping of the bone trabeculae and speckling of the epiphyses of Ollier's disease. The raised blood calcium content of the associated hyperparathyroidism of *osteitis fibrosa cystica* would be a final distinguishing point.

The prognosis would appear to be good as far as life was concerned, though considerable deformity of the affected bones and stunting of growth would probably develop. In the case under review an osteotomy of the right tibia to correct the *varus* deformity, and a synostosis of the lower fibular epiphysis, to prevent the continued unequal growth, would certainly be indicated at the appropriate time.

A MEETING of the Melbourne Paediatric Society was held on July 11, 1945, at the Children's Hospital, Carlton, Dr. ROBERT SOUTHBY, the Acting President, in the chair.

Horner's Syndrome and Heterochromia.

DR. NANCY LEWIS showed a male child, aged five and a half years, with heterochromia, the left iris being blue and the right hazel. His birth weight was nine pounds two ounces. The membranes ruptured at the onset of labour, which was fairly long and ended with a forceps delivery. No Klumpke's paralysis was present at birth. Dr. Lewis said that the heterochromia in this case was due to sympathetic paralysis following a birth injury. Mayou described three such cases, all of which were associated with forceps delivery. It was now definitely established that the heterochromia was due to sympathetic upset. It had been produced experimentally in dogs, cats and rabbits by section of the cervical sympathetic, and the condition had been reported to follow section in humans by both operation and injury—for example, a bayonet wound in the neck. It was usually produced by a paralytic lesion, but had been described as resulting from an irritative lesion, asymmetrical sympathetic tone being sufficient to produce it. Concerning the cause, Dr. Lewis said that it was undecided whether the condition was due to sympathetic action direct on the melanophores or whether the primary anomaly was vascular. This child had a typical Horner's syndrome—enophthalmos, ptosis, a small pupil which did not dilate when cocaine was instilled and sweating over the left side of the forehead. The vision of each eye was normal.

Fibrocystic Disease of the Pancreas.

DR. PETER BLAUBAUM read a paper entitled "Congenital Fibrocystic Disease of the Pancreas" (this paper was published in the issue of June 15, 1946, at page 833).

DR. K. CAMPBELL thanked Dr. Blaubaum for his exhaustive and painstaking paper. She thought cases of infantile pancreatic steatorrhoea and the type of pancreatic deficiency occurring in older children were commoner than was usually supposed. In infantile pancreatic steatorrhoea, the frequent offensive "buttery" stools usually attracted the mother's attention. The undigested neutral fat was liquid at body

temperature, so that when the stool was passed the mother sometimes noted the passage of some oily material, generally described as "like paraffin oil" before the rest of the stool was passed. In other cases she might notice a ring of oil on the napkin around the stool. The fat solidified at room temperature, so that unless the stool was seen during or shortly after passage, these features might not be observed. Dr. Margaret Harper, of Sydney, had drawn attention to these cases some years earlier, and had contributed a paper on the subject to *Archives of Disease in Childhood*. With regard to the pancreatic deficiency met with in older children, Dr. Campbell thought it occurred reasonably frequently. She had under her care at the present time five children so affected. The elaborate laboratory and X-ray investigations suggested by Dorothy Anderson and her co-workers and carried out in the two cases quoted in Dr. Blaubaum's paper were not possible in ordinary practice. Dr. Campbell said that she relied on the analysis of the faeces for the amount of fat in grammes per day (which should not exceed two grammes) and the percentage of split and unsplit fat (the unsplit fat should not exceed 30%). In pancreatic disease one expected a large total amount of fat and a high percentage of unsplit or neutral fat. This test would not reveal all the cases of pancreatic deficiency, as in some stools the neutral fat appeared to be split during the keeping of the stool; but it was the best test at one's disposal in ordinary clinical work. The age of her five patients varied from ten months to seven and a half years. Two of the patients had symptoms of the "coeliac syndrome", or rather "coelioid", as opposed to true coeliac disease, in which the large amount of fat in the stool was digested but not absorbed; two presented with dyspeptic symptoms and one with respiratory symptoms. The amount of fat in the stool varied from 5.5 grammes in one patient receiving a diet poor in fat, to 30 grammes, and the unsplit fat from 74% to 88%.

Dr. Campbell thought the third type of condition due to pancreatic deficiency described by Farber, namely, "meconium ileus", was not common. She had encountered one case in which such a diagnosis might be made. In this condition there was an inspissation of pancreatic secretion blocking the ducts, so that the fatty material in the meconium was not digested; this caused the meconium to become thick and inspissated.

Dr. Blaubaum had mentioned the two types of pancreatic secretion—namely, the thin, watery type rich in minerals produced by secretin, and the thick viscid type produced by vagal stimulation. Dr. Campbell directed attention to the extremely interesting work of Farber and his associates. His conception of the aetiology of fibrocystic disease of the pancreas was that the secretion was too viscous, blocking the ducts, and through back pressure causing dilatation. He therefore experimented with kittens, giving them vagal stimulants such as "Mecholyl" and "Pilocarpine", and was able to bring about a condition of pancreatic achylia and pancreatic changes similar to those in patients with fibrocystic disease of the pancreas.

Dr. H. S. SINN congratulated Dr. Blaubaum on the effort put into his paper. Dr. Sinn had heard of "tickling the peter" and tickling other parts of the anatomy, but Dr. Blaubaum had outlined a method of tickling the pancreas to make it give up its secrets. Dr. Sinn asked whether this condition was the same as Byrom Bramwell's steatorrhoea.

Dr. Blaubaum, in reply, thanked Dr. Campbell for her remarks. The information concerning meconium ileus was interesting. Bramwell's description apparently covered this disease.

(To be continued.)

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held on November 2, 1945.

Demyelinating Diseases of Man and Animals.

MR. H. R. MARSTON outlined the reasons why the laboratory of the Division of Biochemistry and General Nutrition had become more than ordinarily interested in the intermediary processes of oxygen transfer.

He discussed briefly the history of knowledge concerning the demyelinating diseases of man and animals and described in detail the symptomatology and aetiology of a disease of the nervous system which affected sheep and young lambs grazed on areas known to be deficient in copper. Lambs affected with the demyelination lesions which gave rise to the spastic paralysis might be produced at will by mating ewes which had been depleted of their

copper reserves. Depending on the extent of the deficiency, the lesions had been observed to vary from gross symmetrical degeneration of the cerebral white matter with extensive cavity formation extending from the anterior to the posterior poles of the hemispheres, at one extreme, to cases in which no macroscopic change could be found, but which all showed symmetrical degeneration of well-defined tracts of the spinal cord. The nervous aspects of the disease were essentially myelin degeneration, the axis cylinders being destroyed at the same time or immediately following the destruction of the myelin sheaths.

The lesions of the cord invariably occupied the ventral part of the ventrolateral column near the median fissure and the dorsal part of the same column adjacent to the dorsal horn of grey matter. Scattered degeneration frequently might be observed between the two main sites. Knowledge of the course taken by tracts in the human cord suggested that the lesions might be predominantly those of an ascending degeneration. Clinically, however, the symptoms were definitely those of spastic paralysis—of impairment of the upper motor neurones; the muscles of the limbs were in tension and both extensor and retractor reflexes might be elicited normally and proceed without confusion. From the evidence of Wallerian degeneration it had been shown that while the pyramidal tracts were not highly evolved in the sheep, the lesions of descending degeneration after section of the brain stem below the region of the red nucleus were dispersed in a manner identical to those always found in the nervous lesions of lambs born of ewes suffering from acute copper deficiency. The invariable nature of the lesion in the cord raised many questions. Why, for example, was it that pyramidal and rubro-spinal tracts—those of the upper motor neurones—were always affected, and why so very frequently in the young lamb and so infrequently in the fully developed sheep? Was it the myelin itself or the axis cylinders, the nerve cells themselves, which were first affected?

The first hypothesis which suggested itself was the possibility that either the cells of the upper motor neurones were more prone to damage, or their metabolic activity was such as to impose greater nutritional demands than other parts of the central nervous system.

Some years previously Armando Ferraro had found lesions of diffuse degeneration to supervene when chronic potassium cyanide poisoning was induced experimentally in cats and monkeys; and Dr. Weston Hurst, during the period he was in Adelaide, had confirmed these findings in a series of carefully conducted investigations, in which azide was also demonstrated to bring about similar changes. The fact that potassium cyanide and azide could induce demyelination at once suggested that a breakdown occurred in a system which depended on heavy metal catalysts. The cytochrome c:cytochrome oxidase system which was responsible for at least the major oxygen transfer in living tissues was well known to be inhibited by KCN and NaN₃. This led directly to interest in that enzyme system and in oxygen transfer in the brain. The story of the long series of researches which led to the conclusion that the epizootic symmetrical demyelination in the sheep was merely a manifestation of an acute form of the copper deficiency syndrome which occurred in flocks depastured on widely distributed terrain in southern and western Australia, was a long one that had to be told on another occasion, for it bore rather away from the main topic that evening—although it led ultimately into another channel of oxygen transfer with its own specific catalyst.

Cytochrome Oxidase.

MR. F. QUINLAN WATSON then described some of the work on cytochrome oxidase which had been done at the Division of Biochemistry and General Nutrition.

The paper was concerned particularly with the method of estimating cytochrome c oxidase, and the effect of potassium cyanide on the enzyme, both *in vitro* and *in vivo*.

Mr. Watson said that the estimation of cytochrome oxidase consisted, essentially, in measuring the oxygen uptake of a system containing the oxidase (in limited amount) in the presence of adequate quantities of cytochrome c, and an easily oxidized substrate to keep the cytochrome c reduced. In such circumstances, the oxygen uptake became directly proportional to the amount of cytochrome oxidase present. By varying the amount of prepared tissue suspension in each of the six Warburg bottles during a single experiment, while the other reagents were kept constant, it was possible to obtain six different amounts of oxygen uptake at any particular time after the start of the experiment. These might be plotted graphically, the coordinates being oxygen uptake and volume of tissue suspension. A straight line was thus obtained, illustrating

the direct proportionality existing between oxygen uptake and cytochrome oxidase activity. From this line, the net uptake for any particular volume of tissue suspension might be obtained by subtracting the value of the oxygen uptake where no oxidase was present—the intercept of the line on the y axis—from the value at that particular point on the curve. By drying aliquots of the suspension, the QO_2 or oxygen uptake in cubic millimetres per hour per milligramme of dry weight of tissue could be calculated.

The Effect of Potassium Cyanide.

Fixed quantities of rat brain suspension had been set up with different amounts of potassium cyanide. In this way, curves of inhibition of cytochrome oxidase were obtained for five different brain suspensions. These curves revealed that inhibition was greater than 90% when the cyanide concentration exceeded 5×10^{-5} M.

Rabbits and rats had been injected with relatively massive doses of cyanide, and the cytochrome oxidase activities of their brain tissues were estimated. These were higher than expected, and raised the question whether the combination between potassium cyanide and cytochrome oxidase was reversible or not. Dialysis experiments with this compound indicated that it was freely dissociated, if, indeed, an actual compound was formed at all. Evidence was presented which indicated the possibility that the union of potassium cyanide with a cytochrome oxidase-cytochrome c complex might be more stable than the hypothetical cytochrome oxidase cyanide compound. Information regarding the mode of action of potassium cyanide *in vivo* awaited further experimental work.

Correspondence.

PSYCHOTIC CASUALTIES IN NEW GUINEA.

SIR: The article by Captain Ross on psychotic casualties in New Guinea published by you on June 15, 1946, raises the important point of the limitations, if any, which we should put on the use of the term schizophrenia.

In the tropics post-febrile reaction types, including schizoid and cyclothymic types, are so common that the so-called "recovery rates" in tropical mental hospitals are far higher than in those in temperate climates. It would seem likely that a great proportion of Captain Ross's cases must have belonged to this category. From this point of view it would be of great interest to have some account of their subsequent fate, for if, as suggested, they were true schizophrenics, the great majority must still be in mental hospitals, while if schizoid reaction types they will have nearly all recovered.

The efficacy of shock therapy in such a high proportion of cases would also seem to favour the less serious diagnosis. During the war shock therapy has proved of value in the benign psychotic episodes which have been so common, but it would seem likely that with the return of peace its uses will come to be increasingly limited, as the optimistic early reports come to be subjected to adequately controlled observations and its deleterious effects on the highest centres appreciated. While its judicious employment in experienced hands will no doubt continue to benefit chosen cases it is to be sincerely hoped that there will not be a widespread outbreak of electro-convulsion therapy with office units as a post-war nine-day therapeutic wonder.

Yours, etc.,
JOHN POYNTON.

Lawson,
The Esplanade,
Perth.
June 25, 1946.

BLOOD LOSS IN CÆSAREAN SECTION.

SIR: The excellent article by Dr. Lois Benson on "Blood Loss in Cæsarean Section" in the journal on June 15, 1946, directs attention to the blood loss sustained by the mother undergoing Cæsarean section. The blood lost to the infant at Cæsarean section is also very important. It is recognized that, in the average infant circulation, 26% to 34% of the blood volume is contained in the cord and placenta. This is expressed into the baby's circulation in the third stage of labour by the contraction of the uterus (De Marsh, Windle and Alt: "Blood Volume of Newborn Infants in Relation to Early and Late Clamping of Umbilical Cord").

American Journal of Diseases of Children, Volume LXIII, 1942, page 1123.

The amount of blood that the baby would be deprived of by immediate ligation of the umbilical cord after Cæsarean section would be approximately three ounces, quite an appreciable amount when one considers that the total volume of blood in a newborn infant is only one and a half ounces per pound body weight, or ten and a half ounces in a seven pound baby. The tendency for a Cæsarean baby to be relatively anaemic should always be kept in mind. The problem is more real when applied to small and premature infants, who have immediate ligation of the cord, and who therefore do not have the advantage of a "natural transfusion". This applies both to those babies delivered *per vaginam* or by Cæsarean section, and indeed to all infants who for some valid reason have had to be removed immediately after birth from their placental circulation. They should all have the benefit of routine blood examination before leaving hospital, and the possibility of anaemia should be kept in mind.

Yours, etc.,

NORMAN CUNNINGHAM.

"Craignish",
185, Macquarie Street,
Sydney.
June 27, 1946.

"AMICROBIC PYURIA."

SIR: I have read with interest accounts of "amicrobic pyuria" in the various journals, and of the easy and dramatic success of "N.A.B." in its treatment. Ian Monk's communication in your journal of June 1 on this subject and his reference to urinary tuberculosis prompt me to write this note.

I do not think for a moment that Major Monk has any misapprehension about either relative or the absolute frequency of these two diseases, but lest a false impression be gained by readers from the fact that only one case of urinary tuberculosis was recorded during a certain period of nine months in a particular clinic, which is, or was, a very large one, and so that we may be deterred from labelling and treating puzzling pyurias as "amicrobic pyurias" without fully investigating them, I feel I should add to Major Monk's notes the fact that, during an earlier period of almost twelve months in the same clinic (1944), at least three soldiers (I am writing from memory) were subjected to nephrectomy for proven renal tuberculosis and one sailor referred to his home State to undergo the same operation for the same proven condition.

During the same period I can recall one other soldier and one woman who were strong suspects for, but never proven, cases of urinary tuberculosis. I regret that at the time we did not realize there was such a disease entity as abacterial pyuria which could be cured by "N.A.B.". In one, intravenous pyelography revealed a curious generalized, bilateral, mottled appearance of both collecting systems. This cleared up after prolonged treatment.

Another soldier, after an acute abacterial lower genito-urinary infection of suspected but unconfirmed venereal origin, developed a subacute, abacterial pyelonephritis. "N.A.B." might have hastened this man's recovery, too.

There were also perhaps a dozen men suffering from non-specific discharge of a subacute or chronic nature, the cause of which could not be satisfactorily determined, and the cure of which was difficult. Would these have responded to "N.A.B."? (Urethral discharges were admitted only from special hospitals or when "venereal disease" was not the cause.)

Finally, a question or two. Does "amicrobic pyuria" play a significant part in pyelitis of pregnancy? Does "N.A.B." have any effect on the occasional very difficult case of this type, where the bacterial flora may be secondary invaders?

Yours, etc.,
W. F. J. CAMMACK.

WOMEN IN MEDICINE.

SIR: It was interesting and encouraging to see the leading article of the journal devoted to the subject of women in medicine. Certainly there are no barriers to the number of women entering the medical schools, but still they suffer some handicaps because of their sex.

Only a month ago, Dr. Edna Nelson drew attention to the fact that out of fourteen girls who obtained honours

at the last final examination, only nine were appointed to the resident staffs of the great teaching hospitals. The other five were passed over for men who were lower on the list. The same old reason was given, namely, the difficulty of accommodation. Surely after fifty years this matter could be arranged by the hospital authorities.

These positions are supposed to be reserved for the students with the best passes, and it is not fair that women should be debarred from them just because of their sex. The girls do not ask for special privileges, neither do they shrink from any of the unpleasant work. Therefore if they earn the right to these highly prized resident posts, surely they should not be brushed aside.

Yours, etc.,

ELLEN M. KENT HUGHES,
M.B., B.S.

Armidale,
New South Wales,
June 18, 1946.

SCIENTISTS AND WAR.

SIR: It has recently been stated, without contradiction from the United States Government, that United States Navy scientists have perfected a method of bacterial warfare that will be far more murderous than even the atomic bomb. If our association, and medical associations throughout the world, do not utter the most horrified protests at this appalling prostitution of medical knowledge, they will rightly deserve the contempt of all men. This is a threat to humanity that even the Nazis did not make. One practical and surely reasonable way for medical associations to express their horror at this degradation of their professional knowledge would be to expel any doctor who takes part in it for "infamous conduct in a professional respect". For what conduct could possibly be more infamous than to turn knowledge gained for the benefit of humanity to its wholesale, blind destruction?

Scientists in America dealing with nuclear energy have already given our profession an example, by forming an American Federation of Atomic Scientists. Their object may be briefly stated to be to use every possible means to save the world from the disaster of an atomic war.

Can we show ourselves less concerned than physicists with preventing an unimaginable destruction of innocent people?

Yours, etc.,

E. P. DARK.

Katoomba,
New South Wales,
June 10, 1946.

THE NATIONAL HEALTH SERVICE BILL OF GREAT BRITAIN.

SIR: Dr. Siedlecky's letter of June 22, 1946, calls for considerable comment, but I will limit myself to asking her two questions.

Whence does "every citizen" derive "the right to a free medical service"?

How can such service or any other service be given "free" to citizens?

Yours, etc.,

PAUL G. DANE.

111, Collins Street,
Melbourne,
June 27, 1946.

The Royal Australasian College of Physicians.

ORDINARY MEETING.

An ordinary meeting of the Royal Australasian College of Physicians will take place in Melbourne on Thursday, Friday and Saturday, October 10, 11 and 12, 1946.

EXAMINATION FOR MEMBERSHIP.

An examination for membership of the Royal Australasian College of Physicians will take place in September-October, 1946. The written examination will be held in capital cities of the Commonwealth where candidates are offering. The

clinical examination will be held in Melbourne. Only those candidates whose answers in the written examination have attained a standard satisfactory to the Board of Censors will be allowed to proceed to the clinical examination.

The written examination will be conducted in capital cities on Saturday, September 7, 1946. The clinical examination will be in Melbourne on Tuesday and Wednesday, October 8 and 9, 1946.

Applications to appear before the Board of Censors should be made in the prescribed form and must be in the hands of the Honorary Secretary of the College not later than Saturday, August 10, 1946. Application forms are obtainable from the Honorary Secretary, 145, Macquarie Street, Sydney.

Post-Graduate Work.

COURSES AT ADELAIDE.

THE Post-Graduate Committee in Medicine in South Australia announces that the following courses will be held.

Courses for Candidates for Higher Degrees.

A. Course in Anatomy, Physiology and the Principles of Pathology.

A course in anatomy, physiology and the principles of pathology will be given commencing on July 29 for a period of approximately three months. The fee for the course will be £25.

This course is suitable for those preparing for examinations for Parts I M.S., F.R.A.C.S. or F.R.C.S. (England). The examination for the last mentioned will be held in Melbourne and Sydney in January, 1947.

Candidates paying the fee for this course are entitled to attend the following course, B, free of extra charge, and if proceeding to a higher degree are advised to do so.

B. Series of Lectures in Advanced Medicine and Relating Symptoms to Underlying Conditions.

A series of six lecture-demonstrations will be given by Professor E. R. Trethewie, commencing the first week in August. These lectures will be given from 5 to 6.30 o'clock p.m., and the subjects embraced are as follows: (a) cardiac failure (and dyspnoea), (b) haematemesis, (c) abdominal pain, (d) endocrinics, (e) central nervous system symptoms, (f) purpura.

Fee for the course will be between £3 3s. and £5 5s., depending on the number of students enrolling for the course. Further details of both these courses will be published later.

Week-End Course in Surgery.

A symposium on "the acute abdomen" will be given on Saturday, August 31, and Sunday, September 1, at the Verco Lecture Theatre, Institute of Medical and Veterinary Science. The fee for this course will be £3 3s. for medical men who have been engaged in private practice for three years or more and £2 2s. for more junior men. A detailed syllabus will be published later.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Courses for Higher Degrees and Diplomas.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that courses suitable for candidates for Part II of the examination for the degree of Master of Surgery and the diplomas in ophthalmology, gynaecology and obstetrics, and laryngology and otorhinology will begin in Sydney on July 29, 1946, for a period of three months. A fee of £31 10s. will be charged in respect of each of these courses.

Courses for Part I of the above categories will commence on September 16, 1946, for one term.

A course in clinical pathology will also commence on July 29, 1946, and will last for three months; the fee will shortly be announced. This course will be limited to twelve, preference being given to candidates intending to sit for the diploma examination.

All the above courses are open to medical practitioners, and applications should be forwarded to the Secretary of the Post-Graduate Committee, 131, Macquarie Street, Sydney.

Annual General Course.

Film Afternoon, July 17, 1946.—4.15 o'clock p.m., at the Stawell Memorial Hall, 145, Macquarie Street, when the following medical films will be shown: "The Physiology of Anoxia", "Cholelithiasis and Common Duct Stone", "Skin Grafting".

Winter Lectures, July 15 and July 22, 1946.—4.30 o'clock p.m., at the Stawell Memorial Hall, 145, Macquarie Street, as follows: July 15: "The Reproduction of Full-Sized Radiographs by the Method of Solarization", Dr. D. G. Maitland; "Treatment of Malaria", Dr. C. Ruthven Blackburn. July 22: "Hearing Aids", Dr. A. K. McIntyre and Mr. N. E. Murray.

The above film programme and lectures form part of the annual general course conducted by the Post-Graduate Committee, the subscription being £1 1s. per annum, which includes attendance at the monthly film afternoons, winter lectures, occasional lectures which are arranged from time to time *et cetera*. Members of this course are entitled to receive the committee's *Bulletin* at a fee of 10s. 6d. per annum. Full particulars may be obtained on application to the Secretary, or by telephoning BW 7483, B 4606. The Post-Graduate Committee would welcome medical officers of the services at the above film afternoon and winter lectures.

MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.**Programme for August.**

The Melbourne Permanent Post-Graduate Committee has arranged the following programme for August, 1946.

Continuous Refresher Course.

The fourth series of medical and surgical classes for service and ex-service medical officers will commence on July 1 and will be held at the three general hospitals and at the Children's Hospital four days a week throughout the month.

Gynaecology and Obstetrics Refresher.

The third special course at the Women's Hospital for supernumeraries will be conducted for four weeks from August 1.

Course at Warrnambool.

A week-end course has been arranged at Warrnambool: Saturday, August 17, 2.30 p.m.: "Lower Back Pain and Common Joint Conditions", by Dr. C. W. B. Littlejohn. 8 p.m.: "Medical Aspects of Pulmonary Tuberculosis", by Dr. H. M. James.

Sunday, August 18, 10 a.m.: "Diagnosis and Treatment of Intestinal Obstruction", by Dr. W. E. Hughes-Jones. 2 p.m.: "The Role of Endocrines in Gynaecology", by Dr. J. W. Johnstone.

During the course, Dr. C. H. Dickson, Secretary of the Victorian Branch of the British Medical Association, will present the latest information concerning organization within the medical profession. The fee for this course will be £2 2s., or £1 1s. per day, and those interested should communicate with Dr. K. N. O'Donnell, Hamilton.

Course at Geelong.

A further demonstration in the course at the Geelong Hospital will be given at 8.30 p.m. on Wednesday, August 21, on "Genito-Urinary Surgery" by Dr. H. Mortensen. Those wishing to attend should communicate with Dr. Alan Kidd, "Omagh", 216, High Street, Belmont, Geelong.

Classes for Candidates for M.D. Part II and M.R.A.C.P. Examinations.

The M.D. Part II and M.R.A.C.P. course will be suspended during August because of the examinations, and will resume later.

Course for F.R.C.S. (England) Part I.

Those interested in a projected course designed for the examination for Part I F.R.C.S. (England), which is to be held in Australia early in January, 1947, are asked to communicate with the Post-Graduate Committee.

Enrolments for Courses.

Enrolments for courses in Melbourne should be made with the Secretary of the Committee, College of Surgeons, Spring Street, Melbourne, C.1. Telephone: JM 1547-8.

Medical Prizes.**THE STAWELL PRIZE.**

THE Stawell Prize, a memorial to Sir Richard Stawell, is open for competition. The amount of the prize is £30. The conditions are as follows.

1. The prize shall be awarded to the writer of the essay adjudged to be the best on a subject selected annually.
2. The subject for 1946 is "The Management of Diabetes Mellitus in Childhood".
3. The dissertation should be based on personal observation and experience of the writer.
4. The competition is open to graduates of any Australian university.
5. The trustees reserve the right to withhold the award.
6. Essays must be delivered to the Medical Secretary, British Medical Association (Victorian Branch), by 4 o'clock p.m. on November 30, 1946.
7. Each essay must be typewritten or printed and must not exceed 75,000 words in length.
8. Each essay must be distinguished by a motto and must be accompanied by a sealed envelope marked by the same motto, containing the name and address of the author.
9. The trustees reserve the right to publish the prize essay.

Australian Medical Board Proceedings.**NEW SOUTH WALES.**

THE undermentioned have been registered pursuant to the provisions of the *Medical Practitioners Act, 1938-1939*, of New South Wales, as duly qualified medical practitioners:

Nelson, Alan John Mark, M.B., B.S., 1939 (Univ. Melbourne), 11, Parsley Road, Vaucluse.
Nicholson, Alan Gordon, M.B., B.S., 1940 (Univ. Melbourne), Whitehead Street, Corowa.
Stacey, James William, M.B., B.S., 1944 (Univ. Queensland), c/o Dr. Murray, Murwillumbah.
Tan, Kim-Hoang, M.B., B.S., 1946 (Univ. Hong Kong), c/o Chinese Consulate, Sydney.
White, Violet, M.B., B.S., 1943 (Univ. Melbourne), Neleah Court, Peter Street, Wagga Wagga.

Registration of additional qualifications:

Furner, Curzon Watkin, Newcastle (M.B., B.S., 1931, Univ. Sydney), F.R.C.S., 1939 (Edinburgh).
Salisbury, Charles Victor, 217, Macquarie Street, Sydney (L.R.C.S., Edinburgh, L.R.C.P., Edinburgh, L.R.F.P.S., Glasgow, 1928), F.R.C.S. (Edinburgh), M.R.C.O.G. (London), M.M.S.A. (London).

QUEENSLAND.

THE undermentioned have been registered pursuant to the provisions of *The Medical Acts, 1939 to 1940*, of Queensland, as duly qualified medical practitioners:

Willson, John Hector, M.B., B.S., 1939 (Univ. Sydney), 642, New Sandgate Road, Clayfield.
Egan, Maxwell Christmas, M.B., B.S., 1944 (Univ. Sydney), District Hospital, Collingwood.
Neville, David William, M.B., B.S., 1923 (Univ. Melbourne), District Hospital, Prosperine.
Howell, David John, M.B., B.S., 1945 (Univ. Sydney), Charters Towers Hospital, Charters Towers.
Burton-Bradley, Burton Gyrrth, M.B., 1945 (Univ. Sydney), Gin Gin Hospital, Gin Gin.
Hart, James Lloyd, M.B., 1935 (Univ. Sydney), D.O.M.S., R.C.P. and S., 1939 (London), 90, Oriel Road, Clayfield.
Williams, Stanley Charles, M.B., B.S., 1931 (Univ. Sydney), Brisbane Street, Mackay.

The undermentioned additional qualifications have been registered:

Hutcheon, Jack Roy, D.L.O., R.C.P. and S., 1939 (London), Ballow Chambers, Wickham Terrace, Brisbane.
Walters, Lynn David, M.D., 1946 (Univ. Melbourne), on active service.

Dominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Morris, Thomas, M.B., B.S., 1940 (Univ. Melbourne), c.o. Dr. D. N. Short, Blayney.
 Calnan, Gordon Sylvester, provisional registration, 1946 (Univ. Sydney), Grafton Base Hospital, Grafton.
 Rothfield, Neville John, M.B., B.S., 1945 (Univ. Sydney), Royal Hobart Hospital, Hobart.
 Crowe, Marie Josephine, M.B., B.S., 1943 (Univ. Sydney), "Riverwood", George's Hall.
 Puflett, Delmont, M.B., B.S., 1945 (Univ. Sydney), 8, Glen Street, Milson's Point.
 Maderma, Hector Ernest, M.B., B.S., 1942 (Univ. Sydney), 13, Wilga Street, Fairfield.
 Maloney, John Bede, M.B., B.S., 1940 (Univ. Melbourne), 17, Gladswood Gardens, Double Bay.
 Jennings, Alan Norman, M.B., B.S., 1945 (Univ. Sydney), Mental Hospital, Parramatta.
 Barrett, William Joseph, M.B., B.S., 1943 (Univ. Sydney), 51, Fitzwilliam Road, Vaucluse.
 Falk, Keith Louis, M.B., B.S., 1944 (Univ. Sydney), West Wyalong.
 Godden, Ruth Irene, provisional registration, 1946 (Univ. Sydney), St. George District Hospital, Kogarah.
 Rosati, Filippo, M.B., B.S., 1941 (Univ. Sydney), 2, Bower Hall, Reddall Street, Manly.
 Murphy, Warren Ashton, provisional registration, 1946 (Univ. Sydney), Sydney Hospital, Macquarie Street, Sydney.
 Doubleday, Leonard Charles, M.B., B.S., 1944 (Univ. Sydney), R.A.A.F., Garbutt, Townsville.
 McElhone, Mary Mabel, provisional registration, 1946 (Univ. Sydney), 30, Billyard Avenue, Elizabeth Bay.

The undermentioned has applied for election as a member of the Tasmanian Branch of the British Medical Association:
 Elder, Janet Lucile, M.B., B.S., 1946 (Univ. Melbourne), General Hospital, Launceston.

Books Received.

"Ocular Prostheses", by J. H. Prince, F.B.O.A., F.S.M.C., F.I.O.; 1946. Edinburgh: E. and S. Livingstone Limited. 8½" x 5½", pp. 144, with many illustrations. Price: 17s. 6d.
 "Medical Aspects of Growing Old", by A. T. Todd, M.B. (Edinburgh), M.R.C.P. (London); 1946. Bristol: John Wright and Sons Limited. London: Simpkin Marshall (1941) Limited. 8½" x 5½", pp. 72. Price: 15s.

"The Traumatic Deformities and Disabilities of the Upper Extremity", by Arthur Steindler, M.D., F.A.C.S., in collaboration with John Louis Marxer, M.D.; 1946. Springfield: Charles C. Thomas. 10" x 6¾", pp. 517, with many illustrations. Price: \$10.00.

"Injuries of the Knee Joint", by I. S. Smillie, O.B.E., M.B. F.R.C.S. (Edinburgh), F.R.F.P.S.; 1946. Edinburgh: E. and S. Livingstone Limited. 9½" x 6¾", pp. 331, with many illustrations. Price: 35s.

"A Charter for Health", by a Committee of the British Medical Association under the chairmanship of Sir John Boyd Orr; 1946. London: George Allen and Unwin Limited. 7½" x 5". pp. 96, with illustrations. Price: 6s.

"An Experimental Study of Rationing", by R. A. McCance and E. M. Widdowson; 1946. Medical Research Council of the Privy Council, Special Report Series Number 254. London: His Majesty's Stationery Office. 9½" x 6", pp. 62. Price: 1s.

"The X-Ray Treatment of Accessible Cancer", by D. Waldron Smithers, M.D., D.M.R.; 1946. London: Edward Arnold and Company. 10½" x 7½", pp. 156, with many illustrations, some coloured. Price: 40s.

Medical Appointments.

Dr. R. D. Hammill has been appointed honorary medical officer, Port Pirie Hospital, South Australia.

Dr. B. P. McMenamin has been appointed Relieving Medical Officer, Mental Hygiene Service, in accordance with the provisions of *The Public Service Acts, 1922 to 1945*, and *The Mental Hygiene Act of 1938*, of Queensland.

Dr. E. F. West has been appointed a member of the Physiotherapists Board of South Australia.

The following appointments have been made by the Board of Management of the Royal Adelaide Hospital: Dr. R. D.

Carman, Gynaecological and Orthopaedic Registrar; Dr. J. E. Barker, Anæsthetics Registrar; Dr. A. D. Packer, Out-Patients' Registrar; Dr. M. J. Matthews, Resuscitation Registrar; and Dr. O. W. Leitch, Surgical Registrar. Orthopaedic Section: Dr. E. F. West, Honorary Assistant Surgeon in Charge; Dr. N. S. Gunning, Honorary Assistant Surgeon; Dr. N. P. Wilson, Honorary Clinical Assistant.

Diary for the Month.

JULY 9.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
 JULY 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 JULY 9.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 JULY 11.—South Australian Branch, B.M.A.: Council Meeting.
 JULY 12.—Queensland Branch, B.M.A.: Council Meeting.
 JULY 16.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 JULY 17.—Western Australian Branch, B.M.A.: General Meeting.
 JULY 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
 JULY 18.—Victorian Branch, B.M.A.: Executive Meeting.
 JULY 23.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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